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26 September 1984

# Worldwide Report

TELECOMMUNICATIONS POLICY,  
RESEARCH AND DEVELOPMENT

**FBIS**

FOREIGN BROADCAST INFORMATION SERVICE

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26 September 1984

WORLDWIDE REPORT  
TELECOMMUNICATIONS POLICY, RESEARCH AND DEVELOPMENT

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# LOCAL SATELLITE MANUFACTURE ENCOURAGED

Canberra THE AUSTRALIAN in English 2 Aug 84 p 8

[Editorial: "Satellite May Give Business a Goal"]

[Text]

THE suggestion by Professor Don Mathewson that Australian expertise and technology is capable of making at least 85 per cent of the second Aussat domestic communications satellite, and that tenders for the satellite should be restricted to Australian companies, deserves the most serious consideration.

So do the remarks of South Australian Premier John Bannon, who believes that submarines should be manufactured in South Australia. There could be 6 to 10 submarines required for our own use and we could supply submarines to New Zealand.

Both Professor Mathewson and Mr Bannon have focused attention on the range of products which could be made in Australia, but which are being made overseas. It is hard to avoid the conclusion that at times we do not try hard enough to get things done here.

This issue is particularly important in offset manufacturing. When Australian governments make large orders for manufactured goods from overseas companies the deal often includes provision for some parts of the goods to be made in Australia. But, it is often impossible to find local manufacturers who can fulfil the specifications of the contracts.

Some parts of Australian industry, and many in the trade union movement, believe that engineering requirements beyond local companies' capacities are sometimes written into

offset agreements on purpose, and that in these cases there is no real intention of having the products manufactured in Australia.

All of this suggests that, as a community, we ought to be looking much more closely at what we can do if we really try. Have governments really exhausted the local possibilities in their purchasing policies, and in their offset agreements? Has industry taken a sufficiently determined and imaginative approach to the possibilities of catering for existing and new markets?

The greatest freedom of trade is the freedom to enter a market. Australian firms should bend every effort to determine if there are any areas of unfulfilled opportunity in the broad commercial environment.

Why should not Australia manufacture submarines, or space satellites, or anything else? This question is given particular pertinence when people of competence within the community, such as Professor Mathewson and Mr Bannon, suggest that we can and we should.

Australia has a proud history of innovation, especially in mining and agriculture. Our sporting heritage has also shown that as a nation we can pull together, and that individuals can overcome daunting odds in pursuit of seemingly impossible goals.

As a nation we can do anything if we try. The question is, are we really trying?

## GROWTH IN TELECOMMUNICATIONS EQUIPMENT DISCUSSED

Hong Kong SOUTH CHINA MORNING POST in English 4 Aug 84 Business News p 1

### [Text]

The growth of new telecommunications products and services is leading to greater opportunities for private companies to take advantage of a more liberalised market here, according to the managing director of Cable and Wireless (HK) Ltd, Mr Mike Gale.

He told the Hongkong Management Association yesterday that competition in the supply of equipment and services is one means of regulating the efficiency of supply and price.

However, he emphasised that competition is not the sole objective, but rather efficiency in supply and price.

There must be a degree of regulation of the market to ensure the provision of basic telecommunications networks and services, he said.

"Liberalisation policies and the subsequent introduction of competition should only be implemented where true efficiencies of supply and price are actually achievable, and without sacrificing necessary universal service obligations to the community at large," he said.

Mr Gale said that recent studies by the International Chamber of Commerce have shown that in most countries business users of telecommunications facilities are satisfied with the agencies that have monopoly control

over basic networks and services, with Government regulating supply and price as is the case in Hongkong.

He said that "within Hongkong the process of liberalisation of the supply of telecommunications equipment and the provision of new services, which enhance or add value to the basic network, has already begun, and is welcomed by Cable and Wireless (HK).

He pointed out that many equipment areas have already been "liberalised" here, such as telephone handsets.

Similarly, facsimile machines are available from a variety of suppliers and PABX systems.

Telex terminals became privately available from the start of the month.

He said that the Dialcom electronic text message mailbox service introduced last year was specifically designed to incorporate a capability for interconnection to a wide variety of terminals.

Private contractors have also been able to offer value-added services to customers, customising the basic telecommunications facilities to the users particular needs.

Mr Gale said that such value added services stimulate the further growth of information and communications products.

## TELCO EARNS FOURTH OF CABLE &amp; WIRELESS PROFITS

Hong Kong SOUTH CHINA MORNING POST in English 21 Jul 84 Business News p 1

[Article by Michael Blendell]

**[Text]** Hongkong Telephone accounts for about one quarter of Cable and Wireless's group turnover and trading profits, according to the UK-based telecommunications giant's latest annual report.

And Telco looks as though it is going to underpin Cable and Wireless's need for volume growth in telecommunications traffic.

For, says the chairman of Cable and Wireless PLC, Sir Eric Sharp, in his annual review accompanying the accounts, Telco operates in "an area of the world where demand for telecommunications services is certain to grow at explosive rates well into the next century."

Cable and Wireless needs that kind of potential because — without inclusion of annualised results for the latest year to March 31 from recently-acquired Telco — the UK group's results from its Far East and South Pacific operations would have been as flat as the proverbial pancake.

The Far East and South Pacific contribution of £346.8 million represented 55 per cent of Cable and Wireless's aggregate turnover of £650.4 million, up almost 238 per cent on the previous year, while trading profits jumped 77 per cent to £102.7 million.

But if Telco's annualised contribution to that geographic break-up is excluded, Cable and Wireless's turnover and trading profits do

little more than mark time — underlining the importance of the Hongkong company to Cable and Wireless's growth potential.

As it was, Cable and Wireless's consolidated net profit only edged up 15 per cent to £112.8 million in the face of a 60-odd per cent boost in turnover.

Predictably, loans falling due after more than one year jumped almost six-fold from £23.3 million to £133.4 million with Hongkong dollar denominated ones (mostly repayable in June next year)

up from £6.6 million to £84.8 million.

Meanwhile, the Telco acquisition has, according to the operational review, boosted the UK company's total number of group employees to 23,500 from 11,000.

The review draws attention to the two joint venture companies that have started operations in China — Shenda Telephone Co and

Huaying Nanhai Oil Telecommunication Service Co — in which Cable and Wireless PLC owns 49 per cent and Chinese Government organisations the rest of the equity.

Shenda was established to provide a modern telephone system in Shumchun with an initial agreement period of 20 years and 4,000 existing subscribers on which to build.

"Technical plans for the initial phase of the development are complete and the installation of the first 14,000

lines of digital exchange has begun. Direct dialling to and from Hongkong will be possible before the end of this year and international direct dialling will be introduced in the middle of next year."

Huaying Nanhai, meanwhile, provides communication facilities offshore to the operating oil companies presently exploring and developing the South China Sea oilfields.

It is also expanding its on-shore network in Guangdong province.

"Growth in Macau, where the group has applied a technical philosophy which exploits the latest digital technology," the review continues, "has continued to be vigorous."

Group subsidiary, Companhia de Telecomunicacoes de Macau, which is responsible for Macau's internal and external telecommunication services, brought a new digital telephone exchange into service in August.

"This, together with the subsequent connection of associated remote line units, gives a potential capacity of 37,000 lines — of which 20,000 are connected."

"Plans are in hand to increase the new exchange capacity to more than 30,000 lines during this year which will enable the programme to install 10,000 lines a year to be implemented."

Volume of international telephony and telex traffic, measured in minutes, increased 27 per cent and 59 per cent respectively during the year, the review adds.



## BRIEFS

**DIGITAL INFORMATION SYSTEM**--Digital Equipment Corp (DEC) is launching its All-in-1 office and information system in Hongkong. The system integrates all a company's computer systems into a customised information management system. Terminals offer a menu of office and information capabilities to be accessed. The system can be made up of a small computer, a cluster of large computers, or a local or wide area network. As new technologies are introduced by DEC these can be integrated into the existing system. DEC's Far East district sales manager Mr Thomas Coleman said that the system can cost from US\$10,000 to \$500,000. The system is already on sale in other parts of the world, and there are 1,000 installations. [Text] [Hong Kong SOUTH CHINA MORNING POST in English 10 Aug 84 Business News p 3]

**SUBMARINE CABLE INVESTMENT**--Cable and Wireless (HK) Ltd plans to invest \$2.5 billion in the next five years on laying new submarine cables, the general manager, local engineering, Mr H. M. Fung, said yesterday. The cables will link the territory to Singapore, Taiwan, Indonesia, Australia and Europe, he said after a Lions Club lunch meeting. On the international direct dialing service between Hongkong and Canton, it is expected to be operating by the end of this month with 960 telephone lines. The number of lines will increase to 15,000 next year with the installation of the store programme forward control, Mr Fung said, noting that the investment will cost several million dollars. C and W, which has a telephone joint venture in Shumchun, plans to provide one telephone for 10 people next year. Mr Fung said if the service could not meet the demand, then the second stage, the target of which is one telephone to four people, would begin. [Text] [Hong Kong SOUTH CHINA MORNING POST in English 9 Aug 84 Business News p 1]

**SINGAPORE-TAIWAN CABLE**--Samuel Montagu and Co, the London merchant bank, and Lloyd's Bank International, have signed loan agreements totalling about US\$75 million with Cable and Wireless (HK) Ltd and the Telecommunications Authority of Singapore for the construction of a submarine cable between Hongkong and Singapore. The two loans, comprising Export Credits Guarantee Department (ECGD) guaranteed buyer credits of \$52 million and \$22 million, were arranged by the two banks and further ECGD financed contracts are expected later this year. The new cable system, to be ready for service by the end of next year, will supplement the existing submarine cable network in the region and cater for the growing demand for telecommunications capacity for the future. The Hongkong shore-end of a major submarine cable system linking Singapore, Hongkong and



Taiwan, was brought in at Deep Water Bay yesterday where Cable and Wireless (HK)'s coaxial station is situated. The historical moment was witnessed by senior officials of Cable and Wireless (HJ), including Mr Peter Forestal, general manager international operations and engineering and Mr Steve Doyle, engineering manager networks and transmission. The cable segment between Singapore and Hongkong will have not less than 1,200 voice grade circuits while the segment between Hongkong and Taiwan will have not less than 480 voice grade circuits. The SIN-HON-TAI submarine cable system is expected to be completed towards the end of 1984 when it will interconnect with other cable systems to bring vastly enhanced telecommunication capacity and diverse routing to and from Hongkong. Cable and Wireless (HK) is the largest owner in the cable system and requires about HK\$500 million of the total HK\$1.2 billion investment for telecommunication services for Hongkong. [Text [Hong Kong SOUTH CHINA MORNING POST in English 13 Jul 84 Business News p 3] [Hong Kong HONGKONG STANDARD in English 10 Aug 84 Business Standard p 1]

CSO: 5540/012

REHMIN RIBAO ON POST, TELECOMMUNICATIONS DEVELOPMENT

HK270417 Beijing REHMIN RIBAO in Chinese 22 Aug 84 p 1

["Facts and Figures" column: "The Postal and Telecommunications Network Extends to All Parts of the Country"]

[Text] Over the past 35 years China has built a postal and telecommunications network centering on Beijing and extending to various cities and rural areas of the country. The country's total postal routes increased from 700,000 kilometers in 1949 to 4.72 million kilometers in 1983, a 570 percent rise. The number of post and telecommunications bureaus (offices) increased from some 26,000 to some 50,000, a 90.5 percent rise. In the postal and telecommunications service, the number of letters and documents increased by 490 percent, parcels twenty-fourfold, and remittance thirtyfold. The number of newspapers and magazines delivered increased from some 400 million in 1950 to some 191.2 billion, 47.8 times as many. China has direct postal links with 111 countries and regions in the world and carries out international express mail deliveries with 24 cities.

In telecommunications, China has built a network of open-wire lines, cables, microwaves, shortwaves, and satellite ground stations. The Beijing-Shanghai-Hangzhou's 1,800 medium coaxial cable telecommunications lines, extending across eight provinces and cities, were put into operation in 1976. The Beijing-Hankou-Guangzhou medium coaxial cable has reached Guangdong Province and will be completed in 1985. Microwave telecommunications lines 14,000 kilometers long are providing service for 26 provinces, cities, and autonomous regions in the country. Cities and rural areas throughout the country, with the exception of Xizang and Xinjiang, can enjoy the programs of the Central Television Station through a microwave circuit. From 1979 to 1983, the number of urban telephone switchboards increased by 870,000, for a total of 2.62 million. Telephone switchboards in the rural areas amounted to 2.53 million, 39.9 times the number of telephone switchboards in 1951. There are 26,000 long distance telephone lines, 9.9 times the number in early post-liberation days. Automatic long distance telephone dialing has been achieved in 26 cities. Through international telecommunications satellites, we have established direct telecommunications routes with 15 countries and regions. Apart from telegrams and telephones, we have also opened up various types of transmission services, such as radiophotograph of materials and data transmission.

China has made great progress in postal and telecommunications science and technology and in manufacturing postal and telecommunications equipment. Apart from being able to manufacture 60-channel, 300-channel, 1,800-channel, and 4,300-channel carrier telephones, a large capacity longitudinal and transverse system of urban telephone switchboards, a longitudinal and transverse coding system of long distance automatic telephone switchboards, radio facsimile machines, and a full set of satellite ground station equipment, China can also design and make 60-channel and 1,800-channel microwave equipment. The use of the most advanced optical fiber telecommunications technology is now being popularized.

Although China has made great progress in postal and telecommunications undertakings, such progress still cannot meet the increasing demand.

CSO. 5500/4158

FUJIAN RADIO, TV DEVELOPMENT SINCE LIBERATION

OW241501 Fuzhou Fujian Provincial Service in Mandarin 1130 GMT 23 Aug 84

[Excerpts] According to a report of the provincial Radio and Television Department's reporting group, tomorrow will be the 35th anniversary of the founding of our provincial People's Broadcasting Enterprise. In the past 35 years, our provincial People's Broadcasting Enterprise has developed gratifyingly with the establishment of an urban-rural radio-television dissemination network integrating wireless broadcasting with wired broadcasting and radio with television.

At present, the Fujian People's Broadcasting Station and the Fuzhou and Xiamen People's Broadcasting Stations have four sets of programs. The Fujian television station, the Xiamen television station and the Fuzhou educational television station run three sets of consolidated programs and educational programs. The county and city broadcasting stations in the province all have appropriate programs.

Radio and television have become the most powerful means of news dissemination in the province and have been warmly welcomed by the broad masses of people. At the time it was founded in August 1949, the Fujian People's Broadcasting Station had only two old, broken down transmitters, one of 250 watts and another of 1,000 watts, which had been left behind by the Kuomintang government when it evacuated after it collapsed. Today, there are 36 large, medium and small transmitting stations scattered in Fuzhou and Xiamen cities, coastal counties and cities, and remote mountainous areas. Their transmitting power is 100 times stronger than that in the early days of liberation.

At the same time, wired broadcasting has also developed rapidly in the province's urban and rural areas. As of now, 96 percent of the province's villages and towns have set up radio amplifying stations; one-third of the province's production brigades have broadcasting rooms; and the total length of broadcasting wires is over 90,000 kilometers. There are over 1.8 million loudspeakers, covering 38 percent of the households.

In the past few years, the construction of television broadcast facilities has been stepped up. At present, there are 66 relay and hookup stations at prefectural, city, and county levels throughout the province. In addition, there are over 360 hookup stations run by villages, towns, enterprises, and other units. Sixty-five percent of the province's population can now watch television programs. The transition from black-and-white television programs to color has been completed.

FIRST METEOROLOGICAL SATELLITE LAUNCH EXPECTED

OW251241 Beijing in Mandarin to Taiwan 0400 GMT 25 Aug 84

[Text] A spokesman of the Central Meteorological Bureau revealed in mid-August that China was expected to launch its first meteorological satellite shortly, and that three ground receiving stations equipped with Chinese-made electronic devices were nearly completed. This shows the meteorological work of our country is entering into a space era.

At present, upwards of 60 weather forecast centers are using Chinese-made equipment to receive satellite meteorological charts from the United States and Japan. There are 200 meteorological radars presently in use in our country, exceeding the number of such devices in use in any other country in the world. Ever since 1970, our country has been able to make timely forecasts of typhoons. Our country will make accurate weather forecasts 7 to 10 days earlier than its present forecasts by applying large high-speed electronic computers capable of 100 million calculations per second.

CSO: 5500/4151

BRIEFS

**QINGHAI'S QAIDAM TV DEVELOPMENT**--Xining, 3 Sep (XINHUA)--In the past few years, 10 TV transmission stations and 8 TV translator stations have been set up in Qaidam Basin, a newly developed area in northwest Qinghai. Of the 270,000 people in this area, 200,000 have access to television. These TV transmission stations and TV translator stations are located in new cities and towns, in desert oases, and in developing oilfield and mining districts. Because cadres, staff members, workers, peasants, and herdsmen in these localities earn a better income than in other places, the supply of color TV sets is insufficient to meet the demand. Under such circumstances, the commercial departments concerned have taken measures to give priority to meeting the needs of builders of key national construction projects as well as specialized households in rural and pastoral areas in this basin. At present, people of Qaidam have nearly 10,000 TV sets, most of them color TV sets. This year, Haixi TV station, a station capable of broadcasting its own programs, has been established in Delingha, the capital of Haixi Mongol-Zang-Kazak Autonomous Prefecture in northeast Qaidam. [Text] [OW060009 Beijing XINHUA Domestic Service in Chinese 0102 GMT 3 Sep 84]

**GUANGDONG INAUGURATES RADIO STATION**--This morning, the provincial radio and television department and the provincial education department held a meeting to celebrate the inauguration of the No 4 station of the Guangdong people's broadcasting service and the education broadcasting service and the beginning of broadcast lectures on English and Japanese. Yang Yingbin, standing committee member of the provincial CPC committee; Wang Pingshan, vice governor; and responsible comrades of the provincial CPC committee propaganda department, the provincial radio and television department, and the provincial education department attended the meeting. Vice Governor Wang Pingshan delivered a speech. [Summary] [Guangzhou Guangdong Provincial Service in Mandarin 0400 GMT 3 Sep 84]

**SHANDONG, LIAONING SUBMARINE CABLE**--Jinan, 6 Sep (XINHUA)--Shandong and Liaoning provinces were connected by a submarine coaxial cable when a 46.4-kilometer section between Penglai County and Tuoji Island, off the Shandong coast, was completed on Tuesday. The 90-kilometer section between Tuoji Island and Dalian City, Liaoning, was completed in 1981. The line laid across the Bohai Bay will facilitate information flows between east and northeast China. [Text] [OW061017 Beijing XINHUA in English 0849 GMT 6 Sep 84]

SHANGHAI OFFSHORE COMMUNICATIONS COMPANY--Shanghai, 5 Sep (XINHUA)--A new company was established here today to provide communications services for exploration and development of petroleum resources in the South Yellow Sea and the East China Sea. The Communications Service Company of the Shanghai Offshore Oil Service Corporation will service ships, drilling rigs, wharves and offshore oil development firms operating in the area. Set up by the oil corporation and the Shanghai Municipal Administration of Post and Telecommunications, the new company has more than 150,000 telephones, and 1,300 long-distance and 400 telegram circuits. Through a satellite over the Pacific, it can also provide international telephone, facsimile and television services. [Text] [OW051816 Beijing XINHUA in English 1451 GMT 5 Sep 84]

HEILONGJIANG TV BROADCASTING NETWORK--A prefectural-wide microwave network for radio and TV signal transmission in Suihua Prefecture, Heilongjiang Province, was put into operation on 24 August. The network includes 12 microwave stations, eight 1,000-kw TV relaying stations and two 300-kw TV relaying stations. The number of areas that can receive TV programs increased from 20 percent in the past to more than 85 percent. More than 5.5 million yuan, or 70 percent of the total investment, was collected across the prefecture. [Summary] [SK310430 Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 24 AUG 84]

SCIENTIFIC EXPERIMENT SATELLITE RECOVERED--Beijing, 17 Sep (XINHUA)--China successfully recovered today as scheduled the scientific experiment satellite which was launched on 12 September, this year. All the instruments and meters on the satellite functioned normally. [Text] [OW171150 Beijing XINHUA in English 1147 GMT 17 Sep 84]

CSO: 5500/4157



## BRIEFS

PHONE EXCHANGE FROM SWEDEN--The telecommunications agency of South Korea has signed an order with Ericsson concerning digital telephone exchanges worth 390 Swedish kronor. This is the first order written up in accordance with provisions set forth in the framework agreement signed in Korea in May 1983. The framework agreement covered AXE equipment for 750,000 phone customers. Delivery is to be made over 3 years. The newly signed sub-agreement provides for 20 exchange stations, which will be installed in the South Korean rural net. The deliveries will start immediately and will be completed in early 1985. The exchanges will be the first entirely digital stations to be installed in that country. [Text] [Stockholm SVENSKA DAGBLADET in Swedish: 5 Sep 84 p 31]

CSO: 5500/2779



## FEDERAL STUDY SAYS VIDEOTEX LEAD LOST TO UNITED STATES

Ottawa THE CITIZEN in English 26 Jul 84 p 55

[Article by Kirk LaPointe: "Canada Has Lost Videotex Lead to U. S."]

[Text] A federal study says Canada has lost a two-year lead on the United States in developing two-way information technology and that a mass home market for so-called videotex is unlikely for several years.

But it points optimistically to specialized applications of videotex as a way to "increase the likelihood of the industry's long-term development" and says Canadian experience and expertise in the field is paying off.

Videotex allows users to gain access on a modified television screen to information stored in computers along telephone lines or cable using a keyboard and decoding equipment.

The Communications Department study by Wescom Communications Studies and Research Ltd. of Vancouver says the development by federal laboratories in the late 1970s of Telidon, a leading information system technology, gave the country an edge over the U.S.

Government has spent \$67 million and industry has spent more than \$200 million on Telidon development. Rosy estimates of consumer acceptance have been wrong. Government predicted 50,000 Telidon terminals would be in Canadian homes by now — fewer than 5,000 are.

A major obstacle has been cost. Telidon terminals are expensive

— about \$1,000 — and perform fewer functions than similarly priced personal computers.

"No longer... is a mass market for in-home, stand-alone videotex terminals seen as a likely possibility," the report says.

"It is quite unrealistic to consider that a technology such as Telidon is likely, in the short term, to be a commonplace feature of Canadian homes."

But the Wescom study says such special videotex applications as in-home shopping and banking "will provide the impetus that ultimately could lead to a high penetration by some form of a videotex-based information system in the home."

And the edge the U.S. now has will drag along experienced Canadian companies, perhaps through joint ventures and development of other aspects of videotex technology.

Several companies have developed software to allow home computers to use videotex, but Wescom says such applications will not be widespread until the 1990s.

Oddly enough, the report says, one of Telidon's biggest victories proved costly. In 1982, a Telidon-based system by which videotex information was presented on screens was accepted as the North American standard.

When the move was announced, many U.S. companies jumped into the field and began developing videotex applications based on the new North American standard.

But Canadian activity for the next while involved retroactively fitting Telidon terminals and changing information banks to meet the new standard.

"While Canada was initially about two years ahead of the U.S. in terms of technological development, the overall transition period caused the industry to lag behind the U.S.," the study says.

Federal support of Telidon is scheduled to end next March 31, but the government is considering other ways to help the videotex business.

Wescom president Peter Booth doesn't make any recommenda-

tions in his report, but says "the future of this emerging technology seems healthier, with a steady penetration into the business market and significant interest in the residence market."

Although cable companies are interested in using their systems to deliver videotex to the home, telephone lines are expected to continue to be the main delivery vehicle.

CSO: 5520/9

## GOVERNMENT CRITICIZED FOR PULLING OUT OF STARLAB PROJECT

Vancouver THE SUN in English 11 Jul 84 p A1

[Article by Margaret Munro: "Astronomers Angry as Ottawa Drops Starlab"]

**[Text]** OTTAWA — Canada has pulled out of the international Starlab project, leaving Australia and the U.S. scrambling to find a new partner for the orbiting telescope.

Canadian astronomers, who had helped dream up the project, are angry about what they call the "cavalier" way federal space officials cancelled Canada's contribution.

It is not only an international embarrassment, they say, but a bad sign for Canadian astronomy, one of the country's most prized scientific strengths, which has already been undermined by a lack of modern equipment.

"Something has got to change," Dr. Gordon Walker of the University of B.C. says. He was recently in Ottawa to lambaste science ministry officials for their handling of Starlab.

"We have to move out of our village mentality and start treating science with a little more respect and less of the cavalier, high-handed approach we're seen this spring," says Walker, who was elected by the three countries in 1978 as senior scientific director for the project.

In May, Canadian officials said Canada was pausing to reassess the venture, which would cost Canada an estimated \$100 million.

Dr. Ian McDiarmid, head of the National Research Council's Canada Centre for Space

Science, now says Canada has "definitely" forfeited its leadership role.

"There is no question, we're out," he said in a recent interview. "There's a possibility we may buy back into the project at some point in the future but it would be in a much, much smaller way."

Australia and the U.S. must find a new partner within the next year if the project is to proceed on schedule. The two countries approached the British earlier this year. Australian officials are now talking with the Japanese, who have expressed keen interest.

Since Starlab will be above earth's atmosphere, which distorts and filters light reaching earth from far away objects in space, scientists say it will enable them to "look back in time to almost creation of the universe."

It should be able to pick up objects only one twentieth as bright as faintest seen from earth-based telescopes and it should see 100 times as much detail. The remotely controlled telescope is due for its first launch in 1990.

Canada was to build the telescope and manage the project, Australia was to provide the scientific instruments and the U.S. was to provide the space platform and pay for the first two launches and ground-based support.

## NORTHERN TELECOM REVEALS INTERNATIONAL MARKET STRATEGY

Toronto THE GLOBE AND MAIL in English 30 Jul 84 p B1

[Article by Lawrence Surtees: "New Products Propel Nortel Sales Drive"]

**[Text]** To double its sales in the next five years, Northern Telecom Ltd. of Mississauga, Ont., is not only developing new products, but also planning to shift its customer base. Along the way, it is going to confront the big international competition on its own turf, says chairman Walter Light.

Nortel's corporate strategy is capsulized in two catch phrases — Digital World and Open World. The Digital World concept, announced in 1976, has given Nortel the lead in computerized digital switches for telephone companies.

The sales success of products such as its DMS-100 switch in the United States has resulted in a geographic shift of its customer base — U.S. sales have accounted for 61 per cent of 1984 revenue to date, compared with 56 per cent last year and 32 per cent in 1978.

Open World is the strategy for the office of the future, entailing "a big shift to private networks as integrated office networks and systems become more important to businesses, because they can provide better management and efficiency," Mr. Light said in an interview.

"By 1986 or 1987, I anticipate 50 per cent of our revenue will be from the private sector and 50 per cent from utilities and telephone companies."

Nortel will devote \$1.2-billion of research and development funds in the next five years to products and systems for the integrated electronic office.

In the next year, Mr. Light said, Nortel will be announcing new versions of its SL-1 private branch exchange (the office version of the DMS-100 switch), unveiling more office terminals and a new local area network based on the standard telephone line.

Over the next five years, the company plans to devote more of its sales effort to foreign markets and to direct sales; telephone companies are expected to account for a smaller proportion of revenue.

"We're literally doing a megaproject every year," Mr. Light said, referring to the \$1-billion that Nortel will devote to capital expenditures and R and D this year to finance its growth.

"What separates the winners from the losers in our business is the ability to manage the two ele-

ments of the information age — microelectronics and software." These two elements are at the core of products that integrate computers and communications.

He likens an investment in a communications switch to a home computer. The initial investment in the product quickly diminishes in proportion to the subsequent investment in software. But in Nortel's case, the future software is developed and

marketed by the company and its R and D arm, Bell-Northern Research of Ottawa.

Microelectronics' costs are almost certain to fall, offset by rising software costs. To keep its existing products competitive, Nortel will need to increase its software development effort.

Nortel's ambitious plans require continuing financial health, and the recent performance has been impressive. It

earned \$227-million (before an extraordinary gain) on sales of \$3.3-billion last year. For the first half of 1984, profit increased 23 per cent to \$136-million on a sales gain of 22 per cent to \$1.9-billion.

Donald Noble, executive vice-president for finance and administration, said the company can sustain a 20 per cent annual growth rate primarily through retained earnings. But it will likely seek further debt financing later this year and is unlikely to raise funds through further equity issues.

"We will keep our debt to capitalization ratio below 30 per cent," he said, noting that it is currently about 22 per cent.

Mr. Light said the targets can only be met if the company realizes efficiency gains in keeping with its pace of growth. Current efficiencies are at 20 per cent of the cost of sales, or 12 per cent of revenue. "The \$480-million of cost reductions has allowed us to pass savings on to our customers, which has helped us remain competitive."

Nortel could have added another \$100-million to its revenue in the past six months if all its prices were at the 1983 level.

Cost efficiency is crucial to the international sales goals. Mr. Light expects the company to get 15 per cent — or \$1-billion — of 1988 revenue of \$8-billion from sales

abroad. Non-North American revenue in 1983 was \$376.3-million, or 11.4 per cent of total sales.

In the latest six months, international revenue slipped 19 per cent from a year ago to \$168.9-million — but the order backlog jumped 75 per cent to \$175.6-million.

One of Nortel's international objectives is to become better known, which is a reason for the listing of its stock on the London exchange last month. In Britain, business opportunities also appear favorable because of the liberalization of the telecommunications market. The opportunities may be equivalent to the opening up of the U.S. market a decade ago, Mr. Light said.

Like other multi-national companies, Nortel is concerned about protectionist policies abroad; it is also concerned about the relative strength of the Canadian dollar, which has gained against many currencies while weakening against the U. S. dollar, and about a lack of competitive export financing.

The strength of the dollar in relation to other foreign currencies and the need to competitively finance purchases of its equipment may lead to more off-shore manufacturing.

## SOLID GROWTH AT NORTEL

(\$ MILLION)

	1983	1982	1981
REVENUES	3,304.0	3,035.5	2,570.9
R & D SPENDING	324.8	241.4	181.6
PROFIT	268.4	139.4	129.2
SHAREHOLDERS' EQUITY	1,465.5	1,005.5	851.8

## RAIL LINES TO BE USED AS FIBER OPTIC NETWORK ROUTE

Ottawa THE CITIZEN in English 11 Jul 84 p 47

[Text]

Thin strands of glass carrying thousands of computer, telephone and video links are going to be running along railway tracks between Toronto and Montreal, part of a \$20-million network to be built by CNCP Telecommunications.

CNCP, a partnership of Canadian National Railways and Canadian Pacific Ltd., said it is forming a fibre optic network that eventually will stretch across Canada.

The system is to be used to transmit voice and data, as well as for teleconferencing and written message signals such as Telex and Teletex.

Fibre optic systems are considered better than microwave or conventional copper wire cables for transmitting telecommunications information because they are faster, cheaper and more versatile than conventional systems.

The first phase of the network is to link Toronto, Montreal and Ottawa at a cost of \$20 million. CNCP is to call for tenders in

mid-July to supply optical fibre cable and electronic components for the network, and construction is expected to begin in the spring of 1985.

CNCP says that it plans to contract with Canadian National to use a special cable-laying railway car that can place cable into the ground along the sides of CNR railway tracks on the Toronto-Montreal-Ottawa run.

The system is also expected to provide services to customers in Oshawa, Belleville, Kingston, Brockville and Cornwall.

A CNCP news release says the system will be capable of moving 6,000 two-way telephone conversations between Toronto and Montreal on a pair of fibres each the size of a human hair.

Fibre optics have emerged as a key new technology in transmitting telephone calls, computer data and even television pictures.

The system uses laser light to speed the signals across thin strands of glass fibre.

CS01 5520/6

## CRTC REGULATION OF ENHANCED PHONE SERVICES TO CONTINUE

Toronto THE GLOBE AND MAIL in English 13 Jul 84 p B1

[Article by Lawrence Surtees]

[Text]

The Canadian Radio-Television and Telecommunications Commission says it will continue to regulate enhanced services provided by the telephone companies and will allow unregulated companies that sell such services to use the phone companies' lines.

The 60-page decision deals with telecommunications services that use computer processing or other techniques that provide a customer with more than a path to send messages. Examples of enhanced telecommunications services include voice messaging, database retrieval services and electronic mail.

One of the fastest growing enhanced services offered by Bell Canada is Envoy 100, its electronic mail service. Another enhanced service offered by several independent companies is voice messaging, which uses a computer to forward a message to any number of locations by telephone.

The development of enhanced services continues to be spurred by the convergence of computer and communication technologies. Recent estimates by Bell Canada indicate market demand is growing at 30 to 35 per cent a year, keeping up

with demand for computer products and far ahead of demand for conventional telephone services.

Evans Research Corp. of Toronto estimated in 1982 the Canadian market was worth \$2-billion a year.

Companies outside the CRTC's jurisdiction that sell enhanced services must rely on the regulated carriers to provide the transmission capacity essential to their business. For this reason, the commission said it has adopted rules to ensure the telephone companies do not gain a competitive edge.

The CRTC also affirmed the rule that a telephone company must separate control of a message's content from carriage. That means telephone companies cannot enter the electronic publishing field if they have editorial control or seek to distribute internally generated data bases.

Although the decision permits independent companies to resell a carrier's service to enhance it — such as using phone lines to retransmit a message to several parties — companies and individuals are prohibited from reselling basic telephone service to third parties.



## STAND ON SPACE STATION PARTICIPATION TO BE SURVEYED

Toronto THE TORONTO STAR in English 25 Jul 84 p A19

[Text]

OTTAWA (CP) — Space, the final frontier, is on its way to becoming an industrial suburb of Earth.

The U.S. National Aeronautics and Space Administration is urging a dozen western nations, including Canada, to invest manpower and technology in an \$8-billion project to build a permanent, orbiting space station. There, adventurous entrepreneurs will use the low gravity, near-perfect vacuum to produce better, cheaper products than their earth-bound competitors.

And the Canadian government, which is trying to raise the profile of its own space program, is excited at the prospect of an extraterrestrial partnership.

Canada plans to spend \$2.4 million by 1985 to gauge the attitude of scientists and business toward the space station to determine if the country should participate.

"I think there are going to be a lot of opportunities in areas such as communications, remote sensing, space science and technology," said Karl Doetsch, head of Canada's space station study team at the National Research Council (NRC).

"Everyone has an imagination well fed by our science fiction writers. The things they write about can, and probably will, become a reality."

But some Canadian companies are skeptical about any tangible commercial benefits the space station could offer.

"It could be the biggest red herring of this century," says Peter Bolden, a senior engineer at DSMA Atcon Ltd., a Toronto consulting and design firm for space hardware. "The technology is so new, there's no data to prove whether it will work."

NRC recently called for proposals to study the benefits the station could have for Canadian manufacturing. By the end of August, it will award contracts up to \$80,000 each to projects it considers have potential. A complete report to the government on the feasibility of joining the space station should be ready in early 1985.

**Business in space**

NASA has called the space station "the greatest industrial opportunity of this century" and is already using its space shuttle program to show the benefits of business in space.

The maiden flight of the shuttle Discovery — which was twice called off in June — will carry a major experiment to produce large batches of a drug in orbit in a process, called continuous flow electrophoresis, hampered by gravity on Earth.

If the experiment works, it'll provide NASA with some additional leverage in its attempts to convince private companies space is the best environment for materials processing.

"Everyone is sitting and waiting to see how it turns out," said Bolden. "If it's a success, it'll be a boost for the program. If not, well, everyone remembers a failure."

Meanwhile, studies already done on Canada's involvement in the space station show reluctance by manufacturers to make commitments.

A report by Philip A. Lapp Ltd., a scientific consulting firm, says there's active interest in space biology and medicine, but commercial interest in the space station is "currently embryonic."



Two areas that hold great potential are the separation of pancreatic beta cells for insulin production and higher yields of antibodies that can be used as diagnostic tools for cancer, said Lapp spokesman Ken Hancock.

At least one Canadian drug company is reported to be excited about the space station. But beyond that, there's little interest, says the Canadian Manufacturers' Association.

"Our focus is competing in world markets, not other-world markets," said spokesman Catherine Jarrett.

Morrie Schneiderman, director of the Wester' Shore Research and Development Centre in Toronto, said most companies are looking for a two-year pay-back on investments in any field, which isn't going to happen with the space station.

However, Wester' Shore is one exception that views the space station as a definite paying proposition and has launched full-scale research on food production in space.

"We look on this as an educated risk," said Schneiderman. "There is a future in space and we want to be there."

Meanwhile, large aerospace manufacturers such as SPAR Aerospace Ltd., makers of the Canadarm remote manipulator system, are delighted at the prospect of helping to build a space station.

Vice-president Christopher Trump emphasizes the trickle-down effects Canadian participation in the program could have for earthly markets.

"You could list indefinitely the spin-offs from space technology — computer

software, miniaturization, more durable materials."

Canadians interested in the space station hope it will capture the public's imagination and bring much-needed funding and manpower into space exploration.

Several companies, such as McDonnell Douglas, which is running the drug experiment on the shuttle, defend the advantages of having a manned space station.

### **Fine-tuning experiments**

The company predicts that if its experiments are restricted to the shuttle alone it will produce and market only three products by the end of the century. But aboard a space station, where astronauts could fine-tune experiments over a long period of time, they could market 25 made-in-space products by the year 2000.

Other concerns raised by companies potentially interested in investing in the space station include questions about what existing patent laws could do to their research and development investments in space.

"What company is going to want to do 10 years of research and development on the space station if NASA is going to publish the results and share that knowledge with its competitors?" Schneiderman asked.

Also, "you can't plan a long-term production program if the military is going to arrive one day and say 'sorry, we need the station,'" he said.

But Schneiderman is confident the problems will be solved and that there is a future in space.

**BK-12-E2 TYPE 12-CHANNEL CARRIER FREQUENCY SYSTEM FOR SYMMETRICAL CABLE LINES**

Budapest HIRADASTECHNIKA in Hungarian No 4, 1984 pp 145-156

[Article by Elemer Porpaczy, Telephone Factory]

[Excerpt] The article describes the new BK-12-E2 type 12-channel carrier frequency system of the Telephone Factory, which can be operated on symmetrical cables. After discussing the chief characteristics it describes in detail the E2 model end-station and control repeater station racks needed to build the system as well as the specially designed remote powered amplifiers.

In non-postal networks the systems with a small number of channels offer a good possibility for satisfying the communications needs along rail lines and the long oil and gas pipelines which are being established in ever increasing numbers. To satisfy these needs, already existing and expected to increase in the future, the Telephone Factory has taken into its product assortment the modernized BK-12-E2 type cable transmission technology system.

8984

CSO: 5500/3025

HUNGARY

TWT WITH LOW FILAMENT POWER CATHODE

Budapest HIRADASTECHNIKA in Hungarian No 4, 1984 pp 157-159

[Article by Janos Adam, Bela Neumayer and Bela Szekeres, Tungsram Research Institute]

[Author's Summary] The authors describe the design considerations for a long-life oxide cathode for a travelling wave tube with an output between 10 and 20 W operating in the 4 GHz frequency range developed in the EIVRT [United Incandescent Lamp and Electric Company] Research Institute. Reliability of the tubes requires, on the one hand, minimization of the filament power of the cathode system and, on the other hand, maintaining the minimal cathode temperature at the constant value permitted by the emission parameters. The system described and realized ensures a life expectancy of 40,000-50,000 hours at a cathode temperature of 1,000K with a filament power of 2.5W.

8984

CSO: 5500/3025

## UPDATE ON STATUS OF TELECOMMUNICATIONS SATELLITE

22 February Launch Date

Rio de Janeiro GAZETA MERCANTIL in Portuguese 14-15 Jul 84 p 7

[Report by Fernando Pereira]

[Text] Rio--The Brazilian Telecommunications Company (EMBRATEL) received a communication from Arianespace, the French company that is in charge of launching and putting the Brazilian satellite in orbit, informing it that Brasilsat-I is scheduled to be launched at the Kourou base in French Guiana around 22 February of next year.

In Rio, at the Operations Center of the Satellite System in Guaratiba, the EMBRATEL technicians are already testing the satellite control equipment and are still awaiting the installation of the communications equipment, which will be ready for tests in December. In Canada, the leading company of the consortium, Spar, guarantees that the first satellite should be ready at the beginning of January. One month before the launch, it will go to Kourou.

"We are strictly within the timetable," said Luiz Otavio Vasconcelos Prates of EMBRATEL's department of domestic communications via satellite. "On the ground side, in Guaratiba, only the communications antenna is lacking. The satellite in Canada experienced a 1-month delay but our leeway was 2 months. Therefore, they still have 30 days to deliver the satellite before the launch. As for the rocket, it is a service we are contracting. We are not monitoring its assembly but, depending of weather conditions, the launching is guaranteed for 22 February. The reserve satellite should be launched in August."

### Cost

While the Spar-Hughes consortium is building the two satellites in Canada, which will cost \$144 million, the cost of the ground portion, all of it furnished by national manufacturers, has been calculated at \$43 million. Arianespace will receive \$58 million for the launching of the two satellites and another \$15 million if their positioning is correct and they remain

in orbit for the 8 scheduled years. EMBRATEL is additionally spending \$14 million on insurance for the whole project through the Reinsurance Institute of Brazil (IRB).

The space part of the project--the satellite and the Guaratiba control station--is being entirely conceived and produced abroad. The whole ground part will be furnished by national industry except for the low-noise amplifiers.

#### Date Still Unconfirmed

Brasília CORREIO BRAZILIENSE in Portuguese 20 Jul 84 p 7

[Text] Natal--During a press conference granted after the ceremony inaugurating the new headquarters of the Rio Grande do Norte Telecommunications Company (TELERN) in this capital, Communications Minister Haroldo Correa de Mattos said that the expectation is that the Brazilian satellite will be launched on 22 February of next year. However, he pointed out that he considers any confirmation of that date to be premature although the program is going according to the established timetable.

The minister pointed out that the cost of the satellite will amount to \$200 million and that it will be a means of transmission that will cover the whole national territory, facilitating any type of communication.

With the satellite in orbit, all national territory will be benefited including areas where there are no telephones. Haroldo de Mattos emphasized that the Brazilian satellite is the most important program of the Ministry of Communications today, adding that the technology is Canadian and the launcher will be French.

In another part of the press conference, the minister emphasized that needy areas have received priority from his ministry through the specific programs: popularization and the interior distribution of the telephone.

8711

CSO: 5500/2067

# INFORMATICS BILL ESTABLISHES MARKET RESERVE FOR 8 YEARS

Sao Paulo VEJA in Portuguese 8 Aug 84 p 111

[Text] The government bill that reserves the informatics area market exclusively for national companies reached congress last week, 1 year after it was announced. Like important decisions taken at the end of an administration, the document impresses one by what it appears to be, but is not. In none of its 31 articles does the term "market reserve" appear, but it is there, with a stipulated term of 8 years during which the government will exercise control over imports to protect the national firms. The bill creates the National Informatics Commission to include representatives of private enterprise but it preserves the execution of policy in that sector within the Special Secretariat for Informatics (SEI), an agency controlled by military men who have left the intelligence services and which is subordinated to the National Security Council.

More than a decision to protect national industry, the bill indicates the government's intention to legalize the immense apparatus of ambiguities that characterizes the activity of the SEI in recent years and which has transformed it into a sovereign body within the Brazilian state bureaucracy. Congress will have 40 days to examine and vote on the bill beginning from its reading which is scheduled for this Friday. By about the end of September, if there is no discussion, the bill will be approved as a result of the expiration of time.

The document was received cautiously by the opposition congressmen, up to now defenders of the SEI's nationalist position, and criticized by national industrialists, who consider it too bland. Among foreign companies, it aroused the suspicion that the hour of truth is approaching for them. "There was never any talk about time periods," complained Edson Fregni, president of the Brazilian Association of Computer and Peripherals Industry, who built one of the biggest informatics companies, Scopus, in the shelter of the reserve, which has existed de facto since the middle of last decade. "If after 8 years, the market is opened, our heads will roll."

## "Blanc Check"

The foreign companies have decided to wait for the opening of debate in congress before expressing themselves but informally, they do not hide their fears. "It will be like giving the military in the Security

Council a blank check for 8 years," exclaimed a source close to IBM, the biggest computer industry in the world. A few days before the bill was sent to congress, the president of Siemens, the German Helmut Vervuert revealed his apprehension now confirmed. "If our activity in the electronic sector is blocked or arbitrarily limited, there will be nothing left for us to do but to carefully rethink our industrial strategy in Brazil," he said.

The secretary of the National Security Council, General Danilo Venturini, sponsor of the bill along with Colonel Edison Dytz, head of the SEI, disagrees with Vervuert. "Eight years is a reasonable period for the national industry to acquire technological capability," Venturini believes. During that time, the national companies will also be benefited by exemptions of every kind. The SEI's control is really absolute: it extends from the computer and robot industries to those that produce digital watches and video games.

Even among the national industrialists, many feel suffocated by that control. "I am in favor of the reserve but I do not understand why an electronic machine to fry potatoes like those I supply to the McDonald's restaurants is a national security problem," declared industrialist Ricardo Senler, owner of SEMCO, one of the national companies in that sector. Senler complains especially that the SEI prohibited partnerships with foreign companies. "With the reserve we had up to now, we advanced technologically," retorts industrialist Antonio Didier Vianna, president of Microlab Electronics of Rio de Janeiro, one of the rare industrialists who applauded the government bill without reservation. "In Brazil, we have everything that is built on the outside," he believes, "because the sector buys technology legally or pays on the outside; and when it does not buy, it copies or even steals it," said Vianna, manufacturer of magnetic discs and radars, among other products.

In congress, opposition congressmen criticize the excessive political power given by the bill to the executive. "It is inadmissible to delegate to the Security Council the power to legislate on the privacy of citizens," said Deputy Cristina Tavares of the Brazilian Democratic Movement Party (PMDB). On this question, the opposition places itself at the side of Senator Roberto Campos of the Social Democratic Party (PDS), who not only condemns the market reserve but plans to defeat it in congress. His position is that, by closing the electronics sector to foreign capital, the country will always be behind technologically. "The SEI wants to reinvent the wheel," exploded Campos.

8711

CSO: 5500/2067



BRAZIL

BRIEFS

MILITARY COMMUNICATIONS SYSTEM--As part of the week of army celebrations, the telephone communications system with border units in the Amazon region was dedicated today. Speaking directly from his office in Brasilia with Captain Walter Teixeira, commander of the 4th Special Border Platoon on the border with Venezuela, Army Minister Walter Pires expressed thanks for the contribution of that unit in establishing the system. [Excerpt] [Brasilia Domestic Service in Portuguese 2200 GMT 22 Aug 84 PY]

CSO: 5500/2068



M-19'S 'RADIO MACONDO' BEGINS TRANSMISSIONS

PA312310 Madrid EFE in Spanish 0650 GMT 31 Aug 84

[Text] Corinto (Colombia) 30 Aug (EFE) -- A few hours after the cease-fire between the Colombian Government and the guerrillas went into effect, from "somewhere in the mountains" came the signal of "Radio Macondo" transmitting proclamations and exalting the leaders of the "19 April Movement" (M-19). According to telecommunications experts, "Radio Macondo," is a transmitting station of more than 2 kilowatts, which fills the Colombian air with "vallenata" music and interviews with M-19 leaders. It also pays homage to personalities Jaime Bateman and Carlos Toledo Plata, founders and ideologists of the movement.

The station "announcers" claim the transmissions originate in this sector of the Colombian southwest, but experts from the Communications Ministry reported that the transmissions actually originate "somewhere in the central range," near Corinto.

"Radio Macondo," which receives its name from the mythical town in the book "One Hundred Years of Solitude" by Colombian Gabriel Garcia Marquez, 1982 Literature Nobel Price winner, often explains the significance of the "great national dialogue" to its audience. The M-19 and the government of President Belisario Betancur, as well as the "Popular Liberation Army" (EPL) and a splinter group of the "Workers' Self-Defense" (ADO) signed a truce and cease fire pact which goes into effect at 1300 (1800 GMT) today.

CSO: 5500/2074

INTERNATIONAL TELECOMMUNICATIONS AGENCY REFORMED

PA122140 Managua Radio Sandino in Spanish 1830 GMT 12 Sep 84

[Text] The revolutionary government has proceeded to create the Nicaraguan Enterprise for International Telecommunications [Empresa Nicaraguense de Telecomunicaciones Internacionales] thus dissolving the Nicaraguan Telecommunications Via Satellite Corporation. The enterprise will continue to be called Nicatelsat with its own resources, for an indefinite duration, and operating under the direction and control of the Nicaraguan Telecommunications and Postal Services Institute, Telcor.

According to the law creating Nicatelsat, this new enterprise is aimed at promoting and guaranteeing efficiency in international telecommunications. It will have the power to [word indistinct] equipment, make investments, and run, exploit, as well as maintain communications systems assigned to it in perfect operating conditions.

It will have an advisory board and a director who will be appointed by Telcor's minister-director and will issue the pertinent regulations for the operation of this new Nicaraguan enterprise.

CSO: 5500/2075

# MISSION OF LA REPUBLICA NEWSPAPER PRESENTED

PA261755 Panama City LA REPUBLICA in Spanish 26 Aug 84 p 4-a

[Editorial: "Our Line of Conduct"—words within slantlines published in bold-face]

[Excerpts] A newspaper represents an anonymous force that is called public opinion and that is why its best ideals are those based on the citizen's right to know what is taking place, the right to criticize, and the right to dissent, analyze and think freely. In my new role as editor, these are the rules of the game that we will follow because it is the best way to carry out the illustrious exercise of journalism, which is nothing but a daily plebiscite.

Our objectives are to guarantee /justice, freedom, and peace/ in order to achieve the reconciliation of the Panamanian family. In this context, we are motivated by freedom of enterprise, right to property, independent work, defense of human beings and their dignity, the respect for /social justice/, and the rights of workers and their achievements, but without exaggerated and destabilizing positions that carry in them the germ of their self-destruction. LA REPUBLICA will be a tribune for everyone to struggle for their own principles and for the free analysis of ideas, but within respect for the dignity and honor of others.

Our newspaper, which has an essential obligation to express the truth about what is taking place, will always bear in mind our effective democratization which is the essential truth of the present Panamanian situation. Within this, the national unification programs and plans of the government that will be headed by Nicolas Ardito Barletta must be supported in order to achieve rapid and permanent progress that will have an impact on all social, labor, cultural, and political sectors of our population. This will be the first pronouncement of our informative and orientational policy.

Within our republican life, our defense forces have acted within the framework of discipline, order and an unswerving devotion to maintaining the fatherland free from internal and external dangers. In recent years, they have played a significant role in achievement of the age-old Panamanian aspirations of total independence and effective sovereignty. In LA REPUBLICA they will find a firm bastion for making known their efforts to make our country more and more capable of fulfilling the commitments dealing with the defense of the

Panama Canal that are established in the Torrijos-Carter treaties. In the same way, we will maintain our policy of making known the great benefits that the defense forces provide to communities through their civic action. The two aspects of their activity, the purely military aspect carried out in accordance with the high technology of today's world and the civic action aspect that makes them a source of development, will be reported and made known by LA REPUBLICA with enthusiasm and support.

These are the fundamental principles of LA REPUBLICA's journalism. They are joined by a proven faith in the higher destinies of national journalism and our nation, and the conviction that we will act on behalf of the common good.

CSO: 5500/2064

OFFICIAL ON SATELLITE COMMUNICATIONS FACILITIES

PY302148 Lima Cadena Panamericana Television in Spanish 0315 GMT 30 Aug 84

[No video available]

[Text] The head of the Social Communications Institute, [Instituto de Comunicacion Social], Miguel Alva Orlandini, who attended the installation ceremony of the new communications committee of the chamber of deputies, has made a statement about the progress of the state telecommunications network.

[Begin Alva Orlandini recording] Since the Chimbote and Chiclayo television stations are about to go on the air, we will soon have the north coast totally covered. The Trujillo and Ica stations will follow suit in a couple of weeks. In Arequipa we have to solve an energy problem which, once solved, will hopefully allow us to put our station there on the air before the end of the year. This means that all department capitals, from Tumbes to Tacna, will have state-owned television stations receiving satellite signals from Lima Channel 7.

A ground station structure for satellite radio broadcasting is also being installed. The TV ground station facilities can be used by 41 private television stations to reach all departmental capitals and other strategic points in the country through the expansion of relay stations, they will eventually reach all the provincial capital as well.

The inclusion of 15 border towns is envisaged in a second stage of the project, which has already been approved and financed. This will allow nationwide satellite transmissions for the first time. [End recording]

CSO: 5500/2071

FIRM TRIES TO BOOST EXPORT OF CABLES

Dhaka THE BANGLADESH TIMES in English 14 Aug 84 p 8

[Text] Khulna, Aug 13--Bangladesh Cable Shilpa (BCS) is trying to boost exports of telecommunication cables, according to factory sources.

Cables worth about Taka 23 lakh were exported during the last fiscal year (1983-84), while the exports totalled a meagre amount of about Taka four lakh in the immediate preceding year (1982-83). Pakistan was the lone buyer in the two years, it is learnt. There have been no exports of cables in 1981-82 and 1980-81.

The highest foreign sales were in USSR in the years 1978-79 and 1979-80 when cables valued at about Taka 3 crore 37 lakh were exported there in the wake of the 1980 Moscow Olympics.

According to factory sources efforts are on to export cables to Pakistan again and a possibility exists for exports to Iran this year under a recent agreement between the two Governments of Iran and Bangladesh. It may be recalled here that Bangladesh entered the world cable market about nine years ago when the BCS sold cables worth about Taka 2 lakh to Kuwait.

Set up under the then Pakistan-West German collaboration about 15 years ago, the factory produces cables on the basis of the orders. The lone telecommunication cable manufacturing industry of the country is run on no-profit-no-loss basis in order to meet the full requirements of the telephone and telegraph department. Cables are exported after meeting the full domestic requirements.

Based on the imported raw materials, the BCS, which went into commercial production in 1972, produces both insulated and sheathed cables. The factory is no longer plagued by shortage of power and raw materials.

The cable industry, operating in three shifts and manned by a total strength of 364 personnel, achieved a 98 percent of the production target in the last financial year.

The factory management is planning for gradual replacement of equipment and machinery in order to operate it efficiently, it is officially learnt. The concerned authorities are trying to line up the required foreign exchange needed for such replacements with additional facilities.

CSO: 5500/0044



## BRIEFS

TELEPHONE FACTORY PROGRESS--Telephone Shilpa Sangatha Ltd (TSS), Tongi achieved 92% of the overall production target during the year 1983-84, which is the second highest production of TSS since the factory went into commercial production in the year 1970, says a TSS press release. The Factory produced during the year 21,595 Telephone Sets, 14,555 Line Unit of END telephone Exchange Equipments. This include manufacturing of 24 Nos of small P.A.B.Xs (2 ÷ 10 lines and 5 ÷ lines) and 36 Nos F-36 Trunk Exchanges. 70% of the parts required for the assembly and completion of manufacturing process are TSS's own production and rest 30% are imported from abroad including raw materials. The development and manufacturing of Trunk Exchanges have been done for the first time in TSS to meet the urgent requirements of Bangladesh T & T Board. It is worth mentioning that TSS Management is now planning for development and manufacturing of large size EMD PABXs also from this year to meet the demand of Bangladesh T & T Board along with other customers in the county. The industry is manned by about 1000 personnel. [Text] [Dhaka THE NEW NATION in English 17 Aug 84 p 7]

CSO: 5550/0045

## DELHI INSISTS ON INDIGENOUS ELECTRONICS INDUSTRY

Bombay THE TIMES OF INDIA in English 7 Aug 84 p 8

[Article by K.C. Khanna]

[Text] Despite the valiant efforts of the department of electronics (DOE) to catch up with the west, the boons of the robot revolution and the micro-chip miracle have bypassed India. We have no access so far even to such appliances as push-button telephones and home computers which have been in common use overseas for years. If the nation's industrial base, relative to its size and technical skills, is narrow, the input of electronics is smaller still. In many countries, the electronics industry accounts for five per cent or more of the gross national product; in India the comparable figure is just about three-quarters of one percent.

What is worse, the gap is growing. The flourishing black market for digital watches, video recorders, colour TV sets, three-in-ones and a host of similar gadgets is a highly visible pointer. Not so well known is the fact that output-input ratio, a rough measure of indigenous capabilities, has remained more or less constant at 4:1 for a whole decade despite the emergence of a good deal of unsaturated demand for sophisticated electronic end-products. Digitalisation, which began with the computer, has now completely penetrated the communications technology elsewhere and ushered in the telematics phase of the electronics revolution. Integrated digital networks already transmit voice, pictures and data simultaneously in quite a few areas of the globe. In India, the government has just decided to set up a Rs 35-crore national telematics centre to plan similar services.

Among the Union government's promotional agencies, the DOE's powers are unique. In its domain it combines the functions of import control with industrial licensing. Since inception, it has been trying to strike the right balance between the conflicting demands of speed and self-reliance in the development of the electronics industry, small and big units in the business, the manufacturers of end-products and the producers of components and of the major consumers like oil, defence or chemical industries which are interested in liberal imports to modernise and the domestic suppliers clamouring for protection. The results at best have been mixed.

## Sick Units

For a start, it is hardly edifying that at least five percent of the electronics units in the country are either desperately sick or barely limping along while the smugglers continue to make hay. For years the import duty on components was much higher than on end-products even though this lopsided duty structure badly hurt many a dynamic producer of equipment, including the state-owned electronics corporation (ECIL). Corrective measures have been taken of late in this regard but still home-made components are high-priced because capacity has been distributed among so many units and none can achieve economies of scale. Though the DOE has done much to promote indigenous research and development, about a third of the indigenous production of electronics is still based on foreign tie-ups. What is more, the ratio will not decline but may actually go up to about 40 percent a decade hence. The DOE, however, has no difficulty in rebutting the widespread criticism that even small countries like South Korea, Hong Kong, Singapore and Taiwan have marched ahead of India in the field of electronics. According to UNCTAD and the World Bank, the electronics industry in South Korea, the most advanced country in that group, has few linkages with domestic consumers of professional electronics and the import content of its total output is much higher. South Korea, in effect, is "one big electronics export processing zone." India, in contrast, has deliberately built the industry to cater for the burgeoning requirements of the domestic market, and, at least in some areas, the concentration of R and D has paid handsome dividends.

In 1970 the design and assembly of a computer-based data handling system for the IAF, for instance, was proposed to be assigned to a major multinational company. The foreign firm was also expected to install and commission the system in the command and control centres of the IAF. The DOE managed, however, to scotch the move and entrust the task to Indian scientists and engineers instead. Fourteen years on, they are now in a position to deliver the goods. Indigenous TDC 316 computers have been "ruggedised" and "militarised" for both static and mobile deployment and advanced software developed to track multiple targets—enemy aircraft as well as missiles. Likewise, a new family of over-the-horizon (troopscatter) communication system has been developed by the radar and communication project office. The nationwide air defence data handling system, costing Rs 400 crores, will be installed in phases over the next eight years. It will be wholly an indigenous effort.

## Successful Areas

The design, development and commissioning of vehicle-mounted automatic electronic digital exchanges for the army's radio engineering network (AREN), advanced panoramic sonar for the Indian Navy, pulse code modulation multiplex for posts and telegraphs and satellite communications earth stations to work with Indian communication satellites (INSAT as well as INTELSAT) are among the other significant successes of Indian researchers. Much of this equipment can no longer be imported from the west due to increasing rigours of military embargoes. In any case, the indigenous product is often much cheaper and performs better. The home-made digital

exchanges, for instance, would cost only Rs 100 crores while the country would have had to pay no less than Rs 580 crores for an inferior imported product.

And yet, it is clear in retrospect that the government expected too much too soon from its R and D establishments. That partly explains the long delay in importing the know-how for sophisticated computers, the production of hyperpure silicon and the mass manufacture of microchips--the basic building blocks of modern electronic systems. Some countries--Yugoslavia, for instance--imported such technologies before the barriers came down and the prices went up. India, so to speak, missed the bus. The high cost of putting up the manufacturing facilities was perhaps another inhibiting factor. In 1974, the total capital invested in the Indian electronics industry was only Rs 75 crores but now a sum of Rs 50 crores has been earmarked for the semiconductor complex (SCL) at Chandigarh and Rs 90 crores for the projected national silicon facility of Baroda. The plants, to turn out a new range of large-size, main-frame computers and the so-called super minis of contemporary design at ECIL, would also cost a tidy packet.

In the predatory world of international trade in microelectronics, obsolescence is rapid, the competition fierce and the new production techniques a highly guarded secret. High density electronic memory chips were first developed in the U.S. but soon the Japanese overtook the Americans in this field. The U.S., however, is still ahead of Japan in the mass production of microprocessors, while the European countries are trying desperately to catch up with the two leaders. Siemens of West Germany invested the equivalent of Rs 40 crores in a manufacturing line for a range of memories but when the first chips came out, it found that it could not sell them for less than two dollars apiece while Hitachi of Japan was marketing an equivalent product in Europe for only 75 cents. In Britain, the government had pumped in by 1982 at least £ 160 million by way of grants, loans and subsidies to shore up the sagging fortunes of Independent Metal Oxides Semiconductors (INMOS) whose total turnover of microchips that year was worth only £ 26 million. Asked how she reconciled so much government funding of INMOS with her fierce commitment to the free play of the market force, Mrs Thatcher countered that the microchip was at the very heart of the post-industrial civilisation and vital for the future of Britain.

INMOS was hit badly in the late seventies when the metal gate chip was supplanted by the silicon gate chip. The DOE is now thanking its stars that, ironically due to the usual delays in decision-making, no major investments had been made in the semiconductor complex at Chandigarh in a dying technology. The project, first cleared in 1977, is now coming up fast. Since March 5 micron silicon gate large-scale integrated circuit (LSI) are in production. By the middle of next year, SCL hopes to turn out three micron LSIs of the standard variety and also "customised" chips for diverse applications in telecommunications, computers and control systems. American Microsystems Inc and CIT-Alcatel are among SCL's collaborators.

### Process Know-how

The Union government's search for process know-how and the specialised equipment required for the manufacture of hyperpure silicon (with no greater impurity than one part in a billion) has led to Dow Corning, the world's second largest producer of this material. The technology is tightly held by just five firms in the world and make-or-buy decisions for silicon can hardly be dictated by commercial considerations alone. The DOE is rightly, though perhaps belatedly, now aiming for not just self-reliance but self-sufficiency in the production of electronic grade silicon, high-density microchip and high quality computers. And it is prepared to pay the price.

Its move to set up the 200-tonne national silicon facility, in particular, has been criticised on the ground that the interest on the investment alone would suffice to pay for the import of all the material that the country needs today and that, in any case, hyperpure silicon can be produced by research institutes at home. But, as it happens, the material will be required not only for the semi-conductor complex at Chandigarh but also for the country's ambitious programme to produce five MW of solar electricity through photovoltaics by 1990. As it is, the manufacture of photovoltaics at BHEL and elsewhere has ground to a halt due to the dire shortage of silicon in the world market. Nor can Indian engineers hope to design and engineer the equipment needed to produce it at low cost and in bulk in the foreseeable future.

CSO: 5550/042



## PLANNED TELEMATIC CENTER DISCUSSED IN LOK SABHA

Madras THE HINDU in English 9 Aug 84 p 6

[Text] New Delhi, Aug. 8. Dr. M. S. Sanjeevi Rao, Union Deputy Minister for Electronics, today expressed the Government's confidence that Indian engineers would develop a wholly indigenous digital electronic telephone switching system within three years.

Replying to questions in the Lok Sabha on the Government's decision to set up a national telematics centre he said the switching system was essentially based on computer software in which India had developed a high degree of competence.

"We propose to have 250 engineers and 100 supporting staff for the telematics centre. Multinationals like the ITT, Siemens and other companies have developed their electronic switching system. No doubt they have taken a number of years and spent a considerable amount of money. But our strength lies in the development of software and we are very confident that our engineers will deliver the goods. At the moment we have 40 engineers and I am confident that the digital system will become very successful".

Dr. Rao said we were now producing 1.4 lakh lines of the electro-mechanical crossbar system and about 1.8 lakhs of the strouger system and both were outdated.

Import of Lines: Recently it was decided to introduce the electronic system by going in for five lakh lines at Gonda and "we hope to have another five lakh lines at Bangalore." Between 1980 and 1985 11.5 lakh lines would be imported at a cost of Rs. 345 crores. By 1990 we would still be importing 20.6 lakh lines at a cost of Rs. 600 crores.

Dr. Rao said the entire technical personnel for the telematics centre would be Indian. "No doubt we will take advantage of the skills of highly competent Indian residents abroad like Mr. Sam Pitroda. We have done similar excellent work elsewhere. For example, the Electronic Defence Research Laboratory in Bangalore and the Tata Institute of Fundamental Research in Bombay have recently developed an automatic switching system for the army which simultaneously operates the telephone and teleprinter systems".

**Chips from Chandigarh:** The Minister said even for manufacturing five lakh lines with Cit-Alcatel technology from France we would be importing Rs. 150 crores worth of components. The large scale integrated circuitry chips required for the system would be made at Chandigarh.

The Prime Minister, Mrs. Indira Gandhi, said in her written reply to questions from Mr. K. Lakkappa and Mr. Dharam Das Shastri that the indigenous digital system was likely to be developed by mid-1987. It would incorporate sophisticated maintenance aids which would enhance the testing and monitoring facilities and contribute in an indirect way towards improving the degree of satisfaction of telephone users.

**Centre's Work:** Dr. Rao said the telematics centre would initially undertake the design, development and engineering of the electronic switching systems and services on its own at the national level and with consultancy, advice, from within the country and abroad.

It would promote and assist ancillary industries in the production of high quality components, sub-assemblies and equipment to meet the performance standards required by the telematic industry. It would undertake the development of the next generation digital electronic switching systems to meet India's requirements, using the state of the art concepts relevant and appropriate to the country and internationally competitive.

The governing council of the Centre would be assisted by a steering committee for periodic review of the centre's activities. The Secretary of the department would be the chairman of the committee.

CSO: 5550/0046



## BRIEFS

NEW TV TRANSMITTERS--A high power TV transmitter was commissioned 15 August at Kodaikanal in Tamil Nadu. It was inaugurated by the union deputy minister of information and broadcasting, Mr Ghulam Nabi Azad. Speaking on the occasion, Mr Ghulam Nabi Azad said by the end of the sixth plan period the number of TV transmitters in the country will go up to 180. The Kodaikanal TV transmitter will have a service range of 240 km covering a population of 26 million by the end of the year. [Text] [Delhi Domestic Service in English 0240 GMT 16 Aug 84] A TV transmitter was commissioned 16 August Bahrampur in Orissa. It is the 97th TV transmitter in the country and the third in the state. It will cover an area of 2,000 square km with a population of over 500,000. [Excerpt] [Delhi Domestic Service in English 1530 GMT 16 Aug 84] A TV transmitter was commissioned today at Patan in Gujarat. It is the 98th TV transmitter in the country and the sixth in the state. It will cover an area of 2,000 square kilometers with a population of over 5 lakhs. [Excerpt] [Delhi Domestic Service in English 1530 GMT 17 Aug 84] A TV transmitter was commissioned today at Anantpur in the southern State of Andhra Pradesh. It is the 99th TV transmitter in the country and the 13th in the state. It will cover an area of 2,000 sq km and a population of over 300,000. [Text] [Delhi General Overseas Service in English 1330 GMT 18 Aug 84] The number of TV transmitters in the country has gone up to 100 with the commissioning of a transmitter at Bhilwara in Rajasthan today. It will cover an area of 2,200 square kilometers with a population of over 3 lakhs. [Excerpt] [Delhi Domestic Service in English 1530 GMT 19 Aug 84] A TV transmitter was commissioned today at Ahmednagar in Maharashtra. It is the 102d TV transmitter in the country and the 7th in the state. It will have a range of 25 kilometers and will cover a population of over 450,000. [Excerpt] [Delhi Domestic Service in English 1530 GMT 21 Aug 84] A TV transmitter was commissioned today at Ajmer. It is the 103d TV transmitter in the country and the 11th in Rajasthan. It will cover an area of 1,500 square kilometers with a population of over 550,000. [Excerpt] [Delhi Domestic Service in English 1530 GMT 22 Aug 84] A TV transmitter was commissioned today at Adoni in Andhra Pradesh. It is the 104th TV transmitter in the country and 14th in the state. It will have a range of 25 km and will cover a population over 3 lakh. [Excerpt] [Delhi Domestic Service in English 1530 GMT 23 Aug 84] The 105th TV transmitter in the country and the sixth in the state was commissioned in Bijapur in Karnataka this evening. The transmitter will cover an area of 2,000 square km with a population of nearly 4 lakhs. [Excerpts] [Delhi Domestic Service in English 1530 GMT 24 Aug 84]

A TV transmitter was commissioned today at Aurangabad in the western State of Maharashtra. It is the 109th TV transmitter in the country and the ninth in the state. It will cover an area of 1,800 square km with a population of about 550,000. [Text] [Delhi General Overseas Service in English 1330 GMT 27 Aug 84] A TV transmitter was commissioned today at Broach in Gujarat. It is the 110th TV transmitter in the country and the seventh in the state. It will have a range of 25 km and will cover a population of nearly 4 lakhs. [Excerpt] [Delhi Domestic Service in English 1530 GMT 28 Aug 84] The 111th TV transmitter in the country was commissioned today at Purnea in Bihar. It will cover an area of 2,200 square km with a population of 9 and 1/2 lakhs. [Text] [Delhi Domestic Service in English 1530 GMT 29 Aug 84] A TV transmitter was commissioned today at Rajkot. It is the 112th TV transmitter in the country and the 8th in Gujarat. It will cover an area of 2,800 square km with a population of about 7 lakhs. [Excerpt] [Delhi Domestic Service in English 1530 GMT 30 Aug 84]

TV TRANSMITTER IN KARNATAKA--The 125th TV transmitter in the country was commissioned today at (Gadagabjedkari) in Karnataka. It will cover an area of 1,800 square km with a population of about 450,000. [Excerpt] [BK110600 Delhi Domestic Service in English 1530 GMT 10 Sep 84]

NEW SHORTWAVE TRANSMITTER--A 100-kilowatt shortwave transmitter is being inaugurated in Delhi this afternoon. The inaugural program will be broadcast on 7,100 and 11,730 kHz. [Excerpt] [BK101557 Delhi Domestic Service in English 0830 GMT 10 Sep 84]

SPACE COMMISSION CHAIRMAN--The director of the Space Research Organization's satellite center, Prof U. R. Rao, has been appointed chairman of the space commission. He succeeds Prof Satish Dhawan, who retires on the 30th of this month. Prof Rao is one of the leading space scientists in the world. The first Indian satellite, Aryabhata, was designed, fabricated and launched in 1975 under his guidance. [Text] [BK101557 Delhi Domestic Service in English 0830 GMT 10 Sep 84]

FAIZABAD TV TRANSMITTER--A TV transmitter was commissioned today at Faizabad in Uttar Pradesh. It will have a range of 25 km and will cover a population of 1.5 million. [Excerpt] [BK111705 Delhi Domestic Service in English 1530 GMT 11 Sep 84]

DELHI TELEVISION SECOND CHANNEL--The second channel of Delhi doordarshan [television] will be inaugurated by Prime Minister Mrs Gandhi on the 17th of this month. The channel will be operational for 2 hours daily in the evening from 7 - 9 and will cover a radius of 25 kilometers. Besides the Hindi news bulletin at 7:30, other programs of music, dance, and drama as well as some sponsored programs will be telecast on this channel. Inauguration of this channel coincides with the silver jubilee of doordarshan in the country. [Text] [BK111705 Delhi ISI Diplomatic Information Service in English 0848 GMT 11 Sep 84]

WIRELESS MONITORING STATION--A wireless monitoring station was commissioned at Bhopal today by the union deputy communication minister, Mr V.N. Patil. This is the 1st station of its kind in Madhya Pradesh and the 21st in the country. [Excerpt] [BK111705 Delhi Domestic Service in English 1530 GMT 11 Sep 84]

**KURNOOL TELEVISION TRANSMITTER**--Kurnool, Aug. 8.--The need for close cooperation between the Union Government and the State Governments, irrespective of their political affiliations for execution of developmental schemes beneficial to the people, was emphasised by the Union Minister for Shipping and Transport, Mr. K. Vijayabhaskara Reddi, here on Tuesday. The Union Minister, who was speaking after inaugurating the low power television transmitter at Kurnool, said that the disturbing events in several parts of the country were detrimental to the integrity of the country. In this context, a powerful visual medium like the TV which is now being extended on a largescale to cover 70 per cent of the population should work as an integrating force and also educate people on developmental strategies employed in various parts of the country to improve the economic condition of the people, he said. Mr. Mohammad Shakeer, A. P. Minister for Tourism and Wakfs, presided over the function.--Our Staff Reporters. [Text] [Madras THE HINDU in English 9 Aug 84 p 12]

**TV TRANSMITTERS COMMISSIONED**--The 113th TV transmitter in the country was commissioned today at Rampur in Uttar Pradesh. It will cover an area of 2,100 square km with a population of a little over 7 lakhs. [Excerpt] [BK011628 Delhi Domestic Service in English 1530 GMT 31 Aug 84]--A TV transmitter was commissioned today at Dhule in Maharashtra. It is the 114th TV transmitter in the country. It will have a range of 25 km and will cover a population of nearly 5 lakhs, half of them in rural areas. [Excerpt] [BK011628 Delhi Domestic Service in English 1530 GMT 1 Sep 84]--A TV transmitter was commissioned today at Tejpur in Assam. It is the 115th TV transmitter in the country and the 2d in the state. It will cover an area of 1,800 square km with a population of nearly 4 lakhs, most of them in rural areas. [Excerpt] [BK011628 Delhi Domestic Service in English 1530 GMT 2 Sep 84]

**KODAIKANAL TELEVISION CENTER**--Kodaikanal, Aug. 15.--The Deputy Minister for Information and Broadcasting, Mr. Ghulam Nabi Azad, inaugurated the Doordarshan relay centre here this evening. Mr. M. I. Suryanarayana, Chief Engineer, AIR and TV, in his welcome address said that under the special TV crash plan, 126 low-power and 13 high-power TV transmitters would come up throughout the country within a set time-frame to cover 70 per cent of the population. Under the plan, one 10 kW high power TV transmitter operating on Band III, Channel 7, was allotted for Kodaikanal atop a hill 2,172 metres above sea level. The relay centre would be located in a building which was nearing completion. It would transmit through an antenna to be fixed on the 150-metre high tower the erection of which was in progress. When commissioned, the centre would relay programmes from Delhi, and was linked through a microwave system to be provided by P and T. Pending completion of permanent facilities, the transmitter will be operated at reduced power with a radiating antenna on a 15-metre pole on top of the existing building. The Chief Engineer said all the equipment was indigenous and colour compatible. The 10 kW transmitter was supplied by BEL, Bangalore. A set of (TVRO) receiving equipment supplied by ECIL, Hyderabad, had been installed here. The 6.3 m diameter parabolic receiving dish was also supplied by ECIL. [Text] [Madras THE HINDU in English 16 Aug 84 p 12]

TELECOM DEVELOPMENT PLANS--Prime Minister Indira Gandhi said in the Lok Sabha on Wednesday that the digital telecom switching system is likely to be developed in the country by the middle of 1987, reports PTI. She told Mr Dharam Dass Shastri and Mr K. Lakkappa during the question hour that the National Centre for Development of telematics was developing the system at a cost of Rs 36 crore. The system developed indigenously would incorporate sophisticated maintenance aids which would enhance testing and monitoring facilities in an indirect way to improve the degree of satisfaction to the telephone subscriber. Mrs Gandhi said the system would expedite introduction in a phased manner of the emerging telematic services and provide modern means of communication progressively. Replying to supplementaries, the Deputy Minister for Electronics, Dr Sanjeevi Rao, expressed confidence that the digital telecom switching system would be developed indigenously within the next 36 months. He said 40 engineers were currently working on it and ultimately 250 professional engineers and 100 supporting staff would be engaged in it. [Text] [New Delhi PATRIOT in English 9 Aug 84 p 6]

CSO: 5150/0040

PAKISTAN

INDIA SAID PREPARING 'CULTURAL ATTACK' ON PAKISTAN THROUGH TV

GF191238 Lahore JANG in Urdu 17 Aug 84 pp 1, 8

[Article by Hanif Khalid]

[Excerpts] Lahore--It has been learned that India is preparing to make an allout cultural attack on Pakistan. For this purpose, India has decided to set up television booster stations all along its border with Pakistan. Dozens of booster stations are being constructed. This year India was supposed to set up a total of 212 booster stations, or one booster station to be constructed every day and a half.

According to international practices, any country setting up such stations on its borders is under obligation to provide data to its neighboring country. However, India has provided no such information to Pakistan on the subject. After the one in Jammu, another Indian booster station has begun working in Rajputana, whose programs reach to Tharparkar on the Pakistani side. These boosters will also enable India to jam Pakistan's television programs. All they need is a small transmitter and an antenna. They can then transmit a signal on any Pakistani channel and accompany it with a 1,000 cycle tone. When television viewers in India want to switch on to a Pakistani channel they will only get the jamming signals.

CSO: 5500/4748



## FRANCE OFFERS PAKISTAN TRANSFER OF TELEPHONE TECHNOLOGY, CREDIT

Karachi DAWN in English 5 Sep 84 Business Supplement p 1

[Text]

ISLAMABAD, Sept 4: The French Government is said to have indicated its willingness to arrange a credit line of about 24 million dollars on government to government basis for financing a proposed scheme of local manufacture of modern telephone exchange, including complete technology transfer.

Addressing a Press conference here today Mr Louis Jacques Compagny, President of a French telecommunication company, the Alcatel Thomson International, disclosed that his company has also submitted an alternate proposal for setting up the manufacturing facility in the private sector.

Following their decision to adopt digital switching technology Pakistan Telephone and Telegraph Department selected two suppliers in 1983 to install "pilot" electronic exchanges for evaluation of their equipment on a comparative basis, in order to standardise on a technology for local manufacture of these exchanges.

One of the suppliers, the Cit Alcatel which was contracted to install the pilot exchange in Karachi completed their job in May this year and a 10,000-line Cit Alcatel Elo exchange, the first of its kind in Pakistan was inaugurated. Another 10,000 lines will be added to this exchange by October this year.

### Production

In the second phase, the firm entails manufacture of the equipment in Pakistan along with complete transfer of technology. Alcatel

Thomson International proposes to set up an economically viable unit which would start production one year after the signing of the contract and will have 70 per cent of local content after three years.

Mr Compagny said that it has been the policy of his company to establish bi-lateral cooperation for the development of telecommunications technology, with friendly countries, as well as establishing independent local manufacture of Elo exchanges in collaboration with their national telephone departments, rather than through its own subsidiaries.

He further added, in offering its technology to Pakistan, the company has no hidden strings and the offer involves "100 per cent full and complete" transfer of technology including software and R and D capabilities, to any extent desired by Pakistan.

The offer, he said, ensures complete freedom of production, including the freedom to purchase "outside components" from Pakistan's own sources without being tied to Alcatel Thomson.

However, complete and continued updating and upgrading of technology as developed in Alcatel Thomson's own research laboratories will be provided to Pakistan.

Replying to a question, he said local skilled labour available in existing telecommunication factories, can be easily employed right from the beginning, and this, he added, could be achieved after a very short initial re-training programme.

## PAKISTAN

### BRIEFS

PLANS FOR COMMUNICATIONS SATELLITE--Pakistan is to have a satellite exclusively for use in television, telephone, and teleprinter. This was stated by the chairman of Space and Upper Atmosphere Research Commission [SUPARCO] in Karachi today. He said a plan has already been drawn up for the satellite, which would cover the entire country. He pointed out that at the moment, Pakistan is receiving television programs of other countries through the commercial satellite Intelsat. The SUPARCO chairman reiterated Pakistan's opposition to the militarization of outer space and said it had proposed the establishment of an international space agency to promote peaceful application of space technology and restrict military activities (?there). [Text] [BK040339 Karachi Domestic Service in English 1700 GMT 3 Sep 84]

RADIO SERVICE FOR NATIONALS ABROAD--Islamabad, 5 Sep (QNA)--Radio Pakistan has started a special service for Pakistanis working abroad. It can be heard in Gulf countries every Sunday at 0740 GMT on shortwave 16.16 and 25 meter-bands. A spokesman for the organization of overseas Pakistanis, which is presenting the program in cooperation with the station, said today that the objective of this service is to keep Pakistanis abroad in touch with their country. It is worth noting that Pakistan's international service broadcasts 12 hours daily in various languages. [Text] [GF061342 Doha QNA in Arabic 1910 GMT 5 Sep 84]

CSO: 5500/4750



NORWEGIAN FIRM TO BUILD NATIONWIDE RADIO LINK SYSTEM

Oslo AFTENPOSTEN in Norwegian 24 Aug 84 p 28

[Article by Ulf Peter Hellstrom]

[Text] NERA's EB division in Bergen has received a major contract totaling about 110 million kroner for the construction of a nationwide radio link system in Botswana. The overall contract is worth about 150 million kroner and EB/NERA won it in a combined bid with L. M. Ericsson of Sweden. "This will strengthen our position in this market," said division director J. Ripman of NERA.

NERA will deliver 34 radio link stations that will be included in the first computerized telecommunications network in Africa. L. M. Ericsson will produce the telephone exchanges. These exchanges will be worth about 50 million kroner, but the radio link stations will total 100 to 110 million kroner.

"We estimate that 15 to 20 Norwegians will be employed in Botswana in connection with this project, which will begin on 1 October. The entire job will be finished within 3 years. The 34 radio link stations represent one fifth of the annual production of our factory."

The Botswana contract is the fourth major undertaking by the Bergen company in southern Africa during the past 3 years.

The radio link stations from NERA and the telephone exchanges from L. M. Ericsson will tie large sections of the developing country Botswana together with an advanced telecommunications network.

9336

CSO: 5500/2758

# TV TRANSMITTER STATIONS INAUGURATED

Addis Ababa THE ETHIOPIAN HERALD in English 17 Aug 84 pp 1, 4

[Text] Awassa (ENA)--A television transmitter station built at a cost of 1,480,000 birr as part of the Revolutionary Government's media expansion scheme to provide television service to the broad masses of the country was made operational yesterday at the town of Dilla, 91 kms south of here in Gedzo province, Sidamo region.

A station transmitting built at a cost of 370,000 birr to relay television programmes to the town of Yirgalem and the surrounding areas which will also serve as a support to the Diffa transmitting station was also made operational Wednesday.

Both television transmitting stations were inaugurated by Comrade Feleke Gedle-Giorgia, Minister of Information and National Guidance and COPWE Central Committee member.

Comrade Feleke said at the opening of the Dilla television station that it was built in line with the directives given by Comrade Chairman Mengistu Haile-Mariam and that it plays a significant role in providing viewers in developing countries to augment efforts being made in their countries in the economic, political and social fields.

The new transmission station located 15 kms outside the town of Dilla will provide television services to towns within 90 kms radius such as Dilla, Aleta Wondo, Yirga Chefe and Fisseha Genet.

Present at the inaugural ceremony were Comrade Ayalew Kebede, alternate member of COPWE Central Committee and head of ideological affairs of the WPE committee for Sidamo region, Comrade Yosef Wolde Michael, head of the zonal planning office for southern Ethiopia, with the rank of commissioner, Comrade Tefere Endalew, Chief Administrator of Sidamo region, invited guests and representatives of government agencies and mass organizations.

Meanwhile in Awassa, Comrade Feleka was briefed by Comrade Tefera on the purpose of the auditorium being constructed at a cost of 3,000,000 birr volunteered by the inhabitants of the region when he inspected work progress of the construction of the auditorium Wednesday.

Comrade Feleke also toured the offices of the zonal planning office for southern Ethiopia and was briefed on its activities by Comrade Yosef Wolde Michael.

The minister stated at the end of his visit that encouraging results have been registered as a result of the construction efforts mounted by the zonal office.

CSO: 5500/111

## BRIEFS

NEW TRANSMITTERS FOR SOKOTO--The Sokoto state government has signed a contract with an indigenous firm for the supply of one mobile transmitter and four stationary transmitters of 10 kilowatts each for its radio station. The state commissioner for information, social development, youth, sport and culture, Mr Yusuf (Imawala), said at the signing ceremony that it became necessary to purchase the new transmitters because those being used by the state lacked spare parts. He said that the government was embarking on the project because it realized the important role the radio could play in the achievement of the socioeconomic programs of the present administration. Mr David (Ejukwulum), the managing director of the firm, said that the management and engineers of the radio station will travel abroad to inspect the transmitters before their shipment to the country to ensure that they were new and met specifications. [Text] [AB162158 Lagos Domestic Service in English 16 Aug 84]

CSO: 5500/107

## BELTEL SYSTEM TO BEGIN OPERATION

Johannesburg RAND DAILY MAIL in English 28 Aug 84 p 1

[Article by Mike Mortimer: "Breaking Into Beltel Can Save Time and Money"]

[Text]

**WHEN** particular knowledge rests with one person in a company, obtaining facts concerning a specific market activity is time consuming — and risky.

And if, at a moment's notice, a company marketing director wanted to find out a whole series of facts, a secretary or research assistant would be hard-pressed to discover the information.

The problem becomes more acute if the information wanted is outside the company, stored in different buildings, sometimes in different cities.

But how would the South African Post Office (SAPO) Beltel system assist in overcoming the problem?

Well, first it is necessary to understand how Beltel (South Africa's name for public Videotex) works.

A Beltel terminal allows users to communicate over ordinary dial-up telephone lines to a SAPO computer — usually located in your own city.

The terminal is very simple to operate, provides both text and graphics (in colour) and will direct the user to the information of his choice.

The Beltel terminal can either be a dedicated unit or, more likely in an office environment, a modified Personal Computer.

Once a user has dialled his local Beltel computer and entered a security password, information ranging from hard news and the current gold price to holiday accommodation, buying and selling, car rental rates and travel data is available.

The information is supplied to the SAPO computer by various Information Providers (IPs) who can charge, if they wish, for a screen of data.

It is possible for the user to select information depending on how much one needs to know and how much one wishes to pay for it.

While the amount of data being held on the Beltel computers is likely to be very extensive, the real advantage of Videotex appears when one realises that it is possible to communicate with other private databases, via a suite of software called Gateway.

## Communicate

This allows the public Beltel computer to communicate with private databases

stored on virtually any make of computer, the only criterion being that the private communications computer is able to format the screens of data in a manner which can be interpreted by the user terminal.

"The obvious advantage has been seen by financial institutions such as banks and building societies.

Using the Videotex system it is possible for people to interrogate their bank accounts at any time, including weekends, without leaving their home or office.

This service is now available on Beltel through Standard Bank, which links its computer to Beltel via a Gateway.

On the UK's Prestel service it is possible to view the arrival/departure boards at major airports around the country via the American Express Skyguide service.

So, while the biggest advantage to a business in becoming a Beltel user at present is probably the market information available, there are others to look forward to.

For instance, in a few years' time a secretary will be able to: Check on the state of the company account; confirm the arrival time of a flight from London; arrange for a hire car to meet a guest at the airport; urgently contact the sales director, who is somewhere between Cape Town and Bloemfontein;

make a hotel reservation in Durban; send some flowers to a member of staff and get a listing of the current gold price and movements for the last two weeks — all with one telephone call.

Within a few seconds she can log into the company's bank via its Gateway port and interrogate the account. A touch of a key stores the relevant figures on tape.

Breaking out from the bank she returns to Beltel menu, then through the next Gateway to the Skyguide information system. To arrange for the car, she accesses the companies preferential account with a car hire agency. She selects the car required and sends a request. Within 10 minutes she will have a confirmation.

## Message

Now for the Sales Director. Here the Beltel message system comes into play. A message is left on the system directed to his TIN (Terminal Identification Number). He will check into Beltel at least twice a day using his portable terminal, so within a few hours will be in touch with the office.

Then transference to the hotel reservation system via a Gateway. Within a couple of minutes she has the confirmation, once again stored on tape cassette.

Back to Beltel, and into the florist's pages. Within minutes the flowers are ordered plus a suitable card and message selected.

## Warning

Now the gold statistics. She keys the reference number and a warning comes up on the screen: "The next frame will cost between 0-80c". She accepts and immediately she can select the data required.

Before signing off from Beltel she checks the message pad to find the car hire company has confirmed the booking.

When she logs off from Beltel, the entire transaction has taken only 10 minutes (cost 30c plus the local telephone call). She now selects the printer and produces a hard copy of the information she has stored on tape for reference.

Far fetched? Definitely not! Already most of this can be done both here and in the UK.

And within the next few years Videotex systems around the world will allow direct access to the enormous banks of stored data in libraries, statistics departments and research organisations, as well as the specialised information kept by individual companies and organisations participating in the system.

## TELEVISION, RADIO AUDIENCE FIGURES REPORTED

Johannesburg RAND DAILY MAIL in English 31 Aug 84 p 5

[Article by J. Manuel Correia]

[Text]

TV1 has registered a healthy gain in viewers of all races in the second quarter of this year, indicates the latest AIP Media and Products Survey (AMPS).

Bop-TV also registered a big gain in viewers all round, figures show.

The viewership figures on weekdays for the second quarter, with the figures for the first quarter in brackets, are:

● TV1: Whites - 3 055 000 (2 808 000); coloureds - 821 000 (816 000); Asians 373 000 (364 000); blacks - 871 000 (704 000). This gave the station 4 721 000 viewers on weekdays.

● TV2 and TV3: Whites - 67 000 (56 000); coloureds - 71 000 (56 000); Asians - 50 000 (50 000); blacks - 1 511 000 (1 479 000). This gave the stations a total of 1 708 000 (1 691 000) viewers on weekdays.

● Bop-TV: Whites - 81 000 (50 000); coloureds - 42 000 (42 000); Asians - 28 000 (23 000); blacks - 185 000 (147 000). Total weekday viewership of 316 000 (262 000).

The viewership figures for Saturdays are: ● TV1: Whites - 2 812 000 (2 633 000);

coloureds - 836 000 (814 000); Asians 497 000 (357 000); blacks 1 037 000 (886 000). A total of 5 082 000 viewers on Saturdays.

● TV2 and TV3: Whites - 68 000 (77 000); coloureds - 50 000 (101 000); Asians - 27 000 (71 000); blacks - 1 004 000 (1 044 000). A total Saturday viewership of 1 868 000 (1 893 000).

● Bop-TV: Whites - 65 000 (56 000); coloureds - 43 000 (37 000); Asians - 20 000 (34 000); blacks - 166 000 (156 000). A total Saturday audience of 294 000 (273 000). An interesting trend is the drop in Asian viewers.

The figures for Sundays are:

● TV1: Whites - 2 251 000 (2 034 000); coloureds - 645 000 (611 000); Asians - 279 000 (220 000); blacks - 685 000 (520 000). A total Sunday viewership of 3 872 000.

● TV2 and TV3: Whites - 26 000 (26 000); coloureds - 50 000 (151 000); Asians - 33 000 (25 000); blacks - 1 502 000 (1 438 000). A total Sunday figure of 1 690 000 (1 700 000), a drop in viewership.

● Bop-TV: Whites - 79 000 (47 000); coloureds - 42 000 (37 000); Asians - 20 000 (17 000); blacks - 143 000 (120 000). A total Sunday figure of 281 000 (220 000).



## Radio Stations Losing Listeners

RADIO 5 continued to shed listeners at an alarming rate during the second quarter of this year, according to the latest All Media and Products Survey (AMPS).

In fact, the only station that continued to gather listeners was Springbok Radio. It now has 1 700 000 white, coloured and Asian listeners on weekdays, 1 400 000 on Saturdays and 1 300 000 on Sundays.

Its white listenership is just over one-million on weekdays, 822 000 on Saturdays and 774 000 on Sundays.

The non-commercial stations of the SABC and SAUK shed viewers heavily all round.

On weekdays Radio 5 had 314 000 white, coloured and Asian listeners — down from 354 000 in the first quarter. Other figures, with those of the first quarter in brackets are: Satur-

days 295 000 (341 000), Sundays 278 000 (328 000). White listenership was 190 000 (228 000) on weekdays, 168 000 (216 000) on Saturdays and 148 000 (181 000) on Sundays.

Channel 702's white, coloured and Asian listenership on weekdays was 382 000 (386 000), 304 000 (326 000) on Saturdays and 277 000 (300 000) on Sundays. The station's white listenership was 342 000 (343 000) on weekdays, 275 000 (285 000) on Saturdays and 243 000 (271 000) on Sundays.

Big gains in white, coloured and Asian listenership were registered by Capital Radio on weekdays and Sundays. The station registered a slight drop on Saturdays.

Radio Highveld's white listenership dropped badly — 100 000 (124 000) on weekdays, 116 000 (135 000) on Saturdays and 208 000 (266 000) on Sundays.

C50: 5500/112

NEW TELEPHONE EXCHANGES IN ZELENograd PUT INTO OPERATION

Moscow VECHERNYAYA MOSKVA in Russian 3 Feb 84 p 1

[Text] On the eve of 1984, there appeared a number of automatic telephone exchanges on the map of the city. One of them is in Zelenograd. Its index is 536. Telephone numbers of the residents of the sixth and seventh microrayons will start with these figures.

New telephone sets have been installed today in the apartments of Zelenograd residents. They will start working at the end of this month. The new automatic telephone exchanges are being connected simultaneously all over Moscow.

At this time, the installation of equipment at another telephone exchange of Zelenograd has been started: 532. The residents of the eighth, ninth, tenth and twelfth microrayons will have telephone numbers with this index next year.

At the present time, there are three automatic telephone exchanges operating in Zelenograd. When two more automatic telephone exchanges start operating, the problem of telephone services within the existing housing facilities will be fully solved.

10,233

CSO: 5500/1020

## PERSPECTIVES ON EUROPEAN SATELLITE COMMUNICATIONS

Bern TSCHNISCHE RUNDschau in German 31 Jul 84 pp 12-13, 15

[Article by Dr Eng Herbert Weber, chairman of business management of ANT Communications Technology, Ltd, in Backnang]

[Excerpt] In the approximately 20 years of its existence satellite communication has acquired great importance and is still in the process of growing. An impressive example of this is the now worldwide Intelsat System. The number of its permanently operating telephone circuits rose between 1973 and 1983 from about 5,000 to about 30,000, the number of associated ground stations from 85 to 783.

### Existing and Planned Communications Services

The Intelsat System (more than 100 countries are members of the Intelsat organization) is the classic intercontinental transmission system for television signals and large FDM beams. Gradually it has also become an important medium for the transmission of small beams and even of individual telephone conversations to remote relatively inaccessible countries having little communications traffic. With its satellites of continuously increasing size and complexity--the fifth generation is now in operation, the sixth in development--it provides the following capacities in several areas of its radiation: the 6/4-GHz range (C band) and the 14/11-GHz range (Ku band).

Up to now the prevailing transmission technology in the Intelsat System has been analog. Changeover to digital transmission technology with PCM (pulse-code modulation) as source coding and using time division multiple access (TDMA), has commenced with the construction of the ground stations raising 4 and 5 in the FRG as reference stations. The Eutelsat/ECS System (Eutelsat is a union of European postal agencies) has been assigned the task of taking over a portion of the European telephone long-distance traffic, European television distribution (Eurovision) and additional paneuropean service. It involves five ECS satellites which were produced by a group of European firms under the control of the ESA (European Space Agency). The first ECS satellite has been in its orbit and ready for operation since June 1983, the second is to be launched sometime in the coming months and thus toward the end of 1984 there will be two satellites available in their geostationary orbits between 10° and 13° East. The launching of a third flight model has been decided upon.

The ECS satellites possess 12 14/11-GHz channels which can be used for the primary services, that is, for digital telephone transmission and Eurovision television distribution. The second through the fifth flight models are additionally equipped with two 14/12-GHz channels for the so-called secondary or SMS services (satellite multiservice system). Here new services are involved such as videoconference services, data services and facsimile services at selectable bit rates (64 kbit/sec to 2 Mbit/sec) which are to be transmitted by means of multiple access in frequency multiplexing, that is, with one carrier per digital signal. Of the total of 14 installed channels a maximum of 9 can be operated simultaneously.

The television signals are transmitted in frequency modulation in the Eurobeam area; the telephone signals are transmitted in pulse-code modulation in the East, West and Atlantic spot beams. In order to be able to transmit telephone signals to the desired receiving station the transmitting ground station must transmit its information packets (bursts) via the associated transponders. To this end the bursts are modulated on the ground on the carrier frequency corresponding to the appropriate transponder with the appropriate type of polarization.

Eutelsat is employing the first ECS flight model in a way which is not as originally planned. That is to say all 14/11-GHz channels are leased with spot beam radiation for feeding television programs into cable networks.

In the future the German postal system will encounter an important operational task in the Eutelsat System. With its 11-meter station presently in Darmstadt and built by ANT Communications Technology the German postal system will carry out for Eutelsat acceptance test measurements of the ECS satellites in orbit (in-orbit tests).

The French Telecom System in whose radiation area some West European countries are included offers 36-MHz-wide 14/12-GHz transponder channels which are all to be operated digitally and at a bit rate of 25 Mbit/sec with TDMA.

For the German telecommunications satellite system DFS Kopernikus (1987) the German Federal Postal System has ordered two operational satellites and one replacement satellite on the ground as well as 32 14/12-GHz and 2 30/20-GHz ground stations. In its radiation area, which covers the FRG, 11 simultaneously operable transponder channels are being created:

- i. three channels each with 90-MHz band width at 14/11 GHz,
- ii. seven channels each with 44-MHz band width at 14/12 GHz and
- iii. one channel with 90-MHz band width at 30/20 GHz.

New services provided by the DFS include videoconferences, fast data, fast facsimile, all operating at primary bit rates between 64 kbit/sec and 2 Mbit/sec. These signals (as also the telephone signals) are processed into bursts and transmitted in TDMA. Sources and sinks of communications traffic are expected to be banks, business firms, insurance companies, state agencies and associations.

The 14/12-GHz ground stations for the new services are being created in a "core zone" with 3.5-meter antennas, low-noise preamplifiers with field effect transistors and 200-watt traveling wave tube transmitter amplifiers. For "marginal zones" 4.5-meter antennas are provided. The 30/20-GHz ground stations will have antenna diameters of 11 meters, cooled low-noise semiconductor amplifiers and 1-kw transmitter amplifiers.

With the launching of the TV-Sat D 3 (at the end of 1985) additional television and audio-radio channels will be available. In accordance with the WARC-77 plan this satellite has been planned for a radiation area consisting of the FRG and West Berlin. It is being developed and built at the present time within the context of a German-French project. Its primary output will suffice to transmit simultaneously television and audio-radio programs via three of the five existing channels in the 12-GHz range. These programs will be receivable by satellite radio reception installations (SRE) using 90-cm parabolic antennas.

The intention is to occupy the satellite channels with two frequency-modulated television programs and with one PSK-modulated (phase shift keying) beam for 16 digitalized stereo radio programs of very high fidelity. For the transmission of television programs consideration is being given to the possibility of introducing as a new European standard the C-MAC process developed in Great Britain. This process promises increased picture quality and makes possible at least two high-quality TV stereo sound channels.

Audio-radio programs are expected to be an especially attractive feature of satellite radio. At the same time the system provides various facilitations of operation such as the integrated output of transmitter identification and program type identification as well as speech/music commutation and special services such as communications radio, data transmission and a time standard. The high level of system reserves make possible high-quality reception throughout the national coverage area.

Other European satellite programs are: Tele-X in Sweden and Italsat in Italy.

#### Questions Regarding International Planning and Standardization

The multiplicity and variety of satellite systems have confronted postal administrations with difficult problems of organization, coordination and standardization. Specific services can be carried out using different

- i. frequencies,
- ii. output flux densities or EIRP values (equivalent isotropically radiated power),
- iii. positions in the geostationary orbit and
- iv. coding, modulation and access procedures.

Thus the satellite systems listed in Table 1 can distribute television programs to cable stations. The signals for the new services can be communicated via the satellite systems listed in Table 2. A further possibility will be presented in the future by Intelsat: Intelsat has decided to create a so-called IBS useful load (International Business Services). It is certain that the variety of these parameters requires expensive ground stations in great variety. A uniformization of bit rates, band widths, modulation and access processes would be desirable, but probably could be achieved only on the basis of vigorous initiatives on the political side and these are rather improbable. Also in doubt is the level of coordination between satellite-supported and terrestrial systems in the frequency ranges which are usable for various services in accordance with the "Radio Regulations" of the UIT (Union Internationale des Telecommunications). This applies to the 4-, 6-, 11-, 12- and 20-GHz frequency ranges. One of the difficulties lies in the fact that the difference in radio field length between satellite radio and directive terrestrial radio (36,000 km compared with 50 km) is associated with an attenuation difference of 57 db. This results in directive radio transmitter interference with sensitive ground station receivers and also results in ground station transmitter interference with directive radio receivers.

In the 11-GHz range one could deal with this problem by assigning subbands (10.95 to 11.2 and 11.45 to 11.7 GHz) to satellite radio and the other subbands (10.7 to 10.95 and 11.2 to 11.45 GHz) to the directive radio. But because of the presence of already existing equipment this would probably no longer be possible. Thus the Eutelsat/ECS and Intelsat V satellites are usable for television distribution only within limitations. In the 12-GHz range priority would basically have to be given to satellite radio if one were to guarantee undisturbed reception of German and foreign radio satellite programs. But evidently there are also constraints here which forbid such a solution since in parallel with TV-SAT development there also exist developments of 12-GHz directive radio systems using amplitude modulation.

However, it is still possible and it is in fact urgently necessary to make a clear decision within the future 30/20-GHz range since here the most important frequency band reserves for satellite communication are located. It is essential to avoid possible interference between the future 30/20-GHz satellite systems and the 19-GHz directive radio system which is evidently also being planned.

Clear decisions are also necessary regarding the standards of radio satellites. International establishment of the digital audio-radio process would be desirable. Upon these decisions will depend the acceptance of satellite radio as a new medium. Those postal administrations concerned will be required to make additional difficult decisions as new sellers of satellite capacity emerge triggering competition which will offer a variety of choices. By offering IBS capacity Intelsat has answered the challenge of Eutelsat and Telecom who are claiming European communications traffic for themselves. Over and above this Intelsat by implementing the MCS useful load (Maritime Communications System) has entered into the competition offering mobile services. New (American) companies such as, for example, Orion or ISI, intend to offer transmission capacity in competition with Intelsat for the transatlantic traffic.



## Prospects for the Development of Satellite Technology

The demand for satellite-supported classical services and new satellite-supported services will continue to rise appreciably. Even without taking account of the videotelephone service which is expected to emerge in the last decade of this century, a study conducted under contract to the ESA has come to the conclusion that by the year 2000 in the geostationary orbital range which is of importance for western Europe the fixed radio services will create a frequency requirement of about 8 GHz. Of this, 5.9 GHz will be assigned to telephone, data transmission, videoconferences and television program distribution, while 2.1 GHz will be assigned on upward routes to radio satellites. Until the turn of the century telephone services will nevertheless play the most important role. In the Intelsat System in the 17 years between 1983 and 2000 it is estimated that there will be an increase in telephone and data traffic from 30,000 to 500,000 telephone circuits, in other words an increase by the factor 17.

Other studies which have also been carried out for the ESA consider videotelephone services via satellite in the year 2000 without making any corresponding quantification of the frequency requirement. Also in the area of mobile satellite radio services a no less marked growth is expected. Therefore all operating companies for satellite-supported services plan expansions of capacity and are giving thought to the better adaptation of their systems to future conditions of competition.

As a result of feeding television programs into cable networks Eutelsat now expects to use up its inventory of ECS channels more quickly than had been originally planned. On the other hand the time schedule for the development of the second Eutelsat generation appears to be too early. Therefore thought is being given to the idea of filling the gap between the first and second Eutelsat generation with so-called ECSA satellites.

These ECSA satellites are expected to provide increased capacity, enhanced transmitting power and improved breadth of diffusion over the area supplied. The variants proposed hitherto provide for the inclusion of 12, 16 or 18 simultaneously operable channels. In the case of the larger variants a new upward frequency range at 13 GHz would have to be added which would require some entirely new developments and some changeovers in the ECS ground stations.

Intelsat will apparently not continue its previous strategy of constructing ever larger and more complex satellite generations. For the period after 1989 there are expansion plans based upon Intelsat VI satellites and additional smaller types of satellites which are to be optimized for specific services. These latter include the Y satellites with 14/11-GHz useful loads and the Z satellites with 6/4-GHz useful loads.

The intercontinental services, the national services with least Intelsat capacity (domestic services) and the business services are each to be provided using combinations of Intelsat VI satellites, Y satellites and Z satellites. With this strategy Intelsat will be able to react more flexibly to the challenge which is expected to come from glass-fiber deep-sea cables.



At the present time the German Federal Postal System is attempting to determine whether and when the preoperational TV-SAT D 3 will be followed up by the operational satellite of the type TV-SAT D 5, each having five simultaneously operable channels. The still very long interval of time which must intervene before complete cabling of the FRG suggests the idea of using this period as an opportunity to finally introduce satellite radio. Then the programs received all over the FRG could be transmitted by radio satellites and a multitude of local programs could be broadcast via terrestrial transmitters. In addition it would be possible to test programs of higher acoustic fidelity, namely C-MAC and possibly HDTV (high-density TV) and digital television programs as well as digitalized audio-radio programs.

Up to now Inmarsat (organization for maritime satellite communication) has based its ship radio services on Marecs capacity, Marisat capacity and Intelsat capacity. Bids are being solicited for construction of the Inmarsat satellites of the second generation and they will be constructed in the coming years. They will retain the performance features of the first generation. It is expected that the third Inmarsat generation will bring with it the introduction of multibeam diffusion but this will still require substantial efforts in the direction of developing large C-band reflectors and appropriate exciter group radiators.

Sea rescue services and search services employing polar orbital satellites are contemplated as a logical supplement to the communications services of the Inmarsat System. Three satellites having orbital heights of 12,000 km are provided for in the SERES system (Search and Rescue Satellite System) which was defined within the context of a BMFT [German Federal Ministry for Research and Technology] study. These three satellites cover those polar caps which cannot be reached by geostationary satellites. The system is so planned that the ground stations in the vicinity of existing Inmarsat stations can be expanded and thus use can be made of existing switching facilities.

The hitherto inadequate and insufficiently reliable mobile services by land also create an opportunity for satellite radio expansion. The same opportunity is created by the total absence of aircraft radio services. Preparatory studies aim at carrying over modern methods of telephone signal bit rate reduction to future mobile satellite services. It is already technically possible to convert speech signals into data flows of 9.6, 4.8 or even 2.4 kbits/sec. But this is still not economically achievable in the civilian area. The modern basic components for signal processing functions still have to be better used if there is to be a cost-favorable ground station technology and if there is to be an economical and reliable satellite technology. The development of more efficient coding, modulating and multiple access processes is of decisive importance. At the present time studies aim at the goal of providing an integrated satellite system for all types of satellite-supported mobile radio services.

Up until the year 2000 and beyond that the task confronting the satellite radio services is the task of assuring the availability of the requisite resources--principally frequency bands and positions in the geostationary orbit. These include the opening up of new frequency bands such as, for example, the 30- and

20-GHz bands and the further development of processes of frequency reuse. A first step in the direction of penetrating the 30/20-GHz range has already been taken with the DFS program. A related fundamental development program is understood also to have been carried out by RCA under contract to NASA. In reaction to the latter, the Hughes Aircraft Company has also announced the development of the 30/20-GHz satellite.

An economically desirable process of power conservation and frequency reuse will be found in the coming years in the yet to be developed method of multi-beam coverage. In this procedure the diffusion area is covered by a multitude of narrow beams emanating from large unfolding multibeam antennas. In order that it shall be possible to establish connections between arbitrary ground stations the information must be subdivided into packets and connected through by means of a dynamic switching matrix on board.

Such a satellite with satellite-switched TDMA operation (SS-TDMA) is very much more complex than the previous satellite since it performs switching functions. The switching through can be carried out in principle at a suitable radio frequency or intermediate frequency or in the baseband. The last-mentioned method has the additional advantage that the baseband signal can be regenerated or in other words can be freed of noises and distortions and is available for digital signal processing.

Multiband coverage of the FRG by nine beams would be achievable using an unfolding antenna having a diameter of 4.7 meters and functioning in the 30/20-GHz range. Such diffusion has the advantage that the satellite power can be employed economically since only an insubstantial part of it reaches those ground stations for which the information contained in the burst is not intended. The frequency range employed is used multiply since a specific channel frequency is reusable in other beams. All in all by this method such large frequency reserves are available that countrywide or even paneuropean television-telephone nets could be constructed.

Like the frequency bands so also those positions in the geostationary orbit which are subject to low interference are a property which is coming to be in ever shorter supply. In the domain of the American continent it has already become necessary in the C and Ku band to reduce the minimum distances between satellites to 2°. This has resulted in substantially tighter specifications for the satellite and ground station antennas. In the further future these interference problems can be dealt with only by producing cross connections with coordinating functions between different satellite transponders. In essence there are three different methods which are conceivable but which it has thus far not been possible to decisively evaluate and whose advantages and disadvantages must still be investigated:

On the one hand interference on the upward routes and downward routes can be reduced by means of connections between the satellites. In this process their mutual distance could be as much as about 120°. For such intersatellite connections the relevant frequency ranges are millimeter wavelengths or the optical range.

On the other hand a second possibility would be to arrange larger groups of satellites in an orbit position and create short radio or optical links between these satellites. Within such a group (cluster) the satellites are kept individually close to their target position and target configuration. However, this would require for each satellite an expensive orbital and attitude control system. It is in this respect that the third solution is more favorable. In this third solution for one position in the orbit a large platform is provided which has available only one orbit and attitude control system and a very efficient energy supply system employing large solar generator wings. The useful loads are coupled to this large platform mechanically and linked with one another either by lead wires or via radio.

In this way it is possible to have very large antenna reflexes and to use these for several repeaters. But the corresponding mechanical design here constitutes a large challenge since it will be difficult to construct very large structures possessing adequate rigidity and at the same time keep these in their target position and configuration. The construction process may be imagined in the following form: individual bus modules and useful load modules are combined in a space shuttle orbit into the total platform and then transferred by a Centaur stage into the geostationary orbit. This is the method assumed in the case of the platform shown in Figure 8 [Figure not reproduced] which was designed by the General Dynamics Company under contract to NASA. In the course of further development it will be possible to envisage expansions and modifications of this procedure as well as the delivery of fuel and batteries with the aid of robots. But the transport economically into geostationary orbit of still greater platforms such as the Atlantic I designed for the Intelsat System will be possible only by means of vehicle systems of the next generation, which is to say with the next Space Shuttle generation or with Ariane 5. Therefore such platforms should be looked upon as the satellite technology of the 21st century.

Table 1. Possible Satellite Channels for Television Distribution

Satellite System	Frequency Band (GHz)	Band Width (MHz)	Marginal EIRP* (dbW)	Orbit Position
EUTELSAT/ECS	14/11	80	40.8	10.0° East or 13.0° East
INTELSAT V	14/11	72 or 240	41.4 or 44.4	60.0° to 63.0° East
TV-Sat	17/11	27	62.5	19.0° West
DFS	14/12	44	49.0	23.5° East or 28.5° East

\* Equivalent isotropically radiated power.

Table 2. Possible Satellite Channels for New Services

Satellite System	Frequency Band (GHz)	Band Width (MHz)	Bit Rate Per Carrier (kbit/sec)	Mode of Transmission
EUTELSAT/ECS	14/12	80	64 to 2,000 selectable	PCM QPSK FDMA

Table 2 (continued)

<u>Satellite System</u>	<u>Frequency Band (GHz)</u>	<u>Band Width (MHz)</u>	<u>Bit Rate Per Carrier (kbit/sec)</u>	<u>Mode of Transmission</u>
Telecom	14/12	36	25,000	PCM 2-4 PSK TDMA
DFS	14/12	44	60,000	PCM QPSK TDMA

[Source: Reworked version of a lecture delivered at the 25th Postal and Telecommunications Engineering Congress of the Union of German Postal Engineers, Hanover Fair, 1984.]

8008

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NORDSAT PROJECT SCALED DOWN, GO-AHEAD DECISION EXPECTED SOON

Helsinki HUFVUDSTADSBLADET in Swedish 21 Aug 84 p 7

[Article by Ann-Gerd Steinby]

[Text] Everyman's Satellite

Mariehamn--The idea is that anyone should be able to participate in the Nordsat program. But some additional equipment is needed for that. In the first place one needs a parabolic antenna with a radius of around 90 cm that is aimed at the satellite. One needs a connecting unit to the TV set which in turn is equipped with a special indoor unit that intensifies the signals. This unit looks like a little box and is placed on top of the TV. In the future it will be built into TV sets.

It is obvious that antenna receivers in areas with cable TV can be hooked up to the cable TV network.

Decision on Nordsat's Fate Next Year

No, the Nordsat project is far from dead and buried. On the contrary it is very much alive--although it has been scaled down somewhat.

Since 1982 three different Nordic project groups have been working intensively on different aspects of the planned Nordic TV satellite project. Now the basic material is ready and it is time to talk about things. There are a lot of questions left to agree on, especially those of an economic nature, since billions are involved in satellite projects. But the project leader, Norwegian Helge M. Sonneland, is optimistic.

"I have no illusions that the discussions will be easy. But now at least we have a concrete base to work on. That should make Nordic cooperation possible," he said.

Sonneland lectured on the satellite project at a course on Nordic cooperation that was held in Finstrom, Aland. We met just before he caught the plane to Helsinki and on to Copenhagen, where he is stationed. And where a committee of Nordic civil servants will discuss the plans on Tuesday.

## Long Time

Nordsat has certainly taken a long time. In 1974 they started talking about TV exchanges across the boundaries of the Nordic countries. A study was made 3 years later about possible cooperation via satellite. At that time the satellites were so new that little was known of their possibilities.

In 1979 Nordsat came up again under the principle that all Nordic TV programs should be available for viewing in the entire Nordic region. But when this idea was studied by various concerned bodies it was decided that it would be too expensive. In 1982 Denmark pulled out, saying that it wanted to develop its own TV-2 network first. And plans were started for a scaled-down Nordsat that did not include Denmark.

Is the new project much cheaper than the old one?

"Of course it will be cheaper, for one thing because the satellites are smaller," said Sonneland.

## Three Channels

Under the new plans the idea of "everything for everyone" has been abandoned. The idea now is to have three channels, one for a selection of programs from Finland's TV 1 and 2, one for a similar selection of programs from Sweden's TV 1 and 2 and a third channel for selections from Norwegian and Icelandic programs.

According to Sonneland one thing that greatly changed the starting point in the future discussions was the Swedish Tele-X satellite. As we know Sweden is the primary backer. Norway has a 15-percent share and Finland has a 4-5 percent share in the form of an industrial cooperation project.

"Tele-X can broadcast on up to three channels. It is an experimental satellite and according to plan it will be put in orbit in February 1987. It seems natural to incorporate Tele-X as the beginning of a permanent Nordic system," Sonneland said.

## At Least Two Satellites

At least two satellites are needed for a system like this, he pointed out. Under the most optimistic timetable Tele-X would go up in 1987 and the first Nordsat satellite would join it in 1989.

When it comes to costs the project will not be cheap. No one can say for sure today exactly how much will be involved. But it is known that one can get a satellite system for 1.6-2.3 billion Swedish kronor, Sonneland said.



Some expenses and operating costs must be added to that. Among other things stations are needed and the question is whether to have a joint station or one in each country. This can cost between 30 and 40 million Swedish kronor.

"The cost of programs will depend entirely on how much new production is planned. There will also be costs for subtitles and translation."

Sonneland stressed that one must be prepared to develop the system and the cooperation gradually. What we start out with today does not have to be what we have 5 or 10 years from now.

#### Will Not Last Forever

Unfortunately this kind of satellite has a limited life span. Sonneland said it should be possible to guarantee them for 7 years. But since they are sent into an orbit that is 38,000 km above the earth it is impossible to repair them if something breaks down. They need fuel which eventually runs out, batteries that are slowly used up, and so forth.

In the future it may be possible to place satellites so close to the earth that they can be serviced. But this is not yet feasible. And Sonneland pointed out that in any case the subsequent cost of placing a new satellite in an already established satellite system will be considerably lower than the original establishment cost.

The satellites will be placed in orbit over the equator and will then be aimed at the Nordic region, all in accordance with international agreements that assign positions along the orbit. For it is only over the equator that satellites can be kept in a constant orbit where they rotate around the earth at the same speed that the earth rotates on its own axis.

#### Many Difficulties

Now things have come so far that discussions on the Nordic level can begin. A special deliberation group with representatives from Finland, Sweden, Norway and Iceland has been appointed and will start working in the very near future. The Nordic communications ministers will discuss the matter at a meeting in Helsinki next week. The goal is to prepare a draft agreement for discussion at the March 1985 session of the Nordic Council. The idea is to have the Nordic Council express its views before the final decision is made at the ministerial level.

And there is quite a lot that must be decided in the half year leading up to the Nordic Council session. The problem of financing is an important one; should the satellite cooperation come under a Nordic consortium or should payments occur through national budgets, for example? Consideration should be given as to where the satellites will be purchased and whether to use Tele-X in this connection. Ownership problems must be discussed and some thought must be given as to how many channels the satellites should have and whether to equip them for other things besides radio and TV broadcasts.



## BRIEFS

RADAR SYSTEM PURCHASE--With approval from the Cyprus Government, the Cyprus Telecommunications Authority signed an agreement with the French "Thomson" Company for the purchase of a modern Civil Aviation Radar System for approximately 3.5 million pounds. The system will be installed on Mount Kionia and, having a range of approximately 200 miles, it will cover the entire Cyprus FIR. Operating personnel will be trained at French Government installations in France. [Text] [NC212052 Nicosia I ELEVETHEROTIPIA in Greek 21 Aug 84 pp 1, 3]

CSO: 5500/2769

# TELECOMMUNICATIONS AGENCY WEIGHS RESTRUCTURING

Oslo AFTENPOSTEN in Norwegian 3 Sep 84 p 27

[Commentary by Ulf Peter Hellstrom: "Telecommunications Agency Moves Toward Clarification"]

[Text] Political authorities will be confronting a formidable task in the coming months: After the Stette Commission's report about organization of the Telecommunications Administration and its relationship to the national administration has been presented, the management and the politicians can now begin the work of clarifying the place of telecommunications services in Norway in the coming years, and the involvement of the public in the growing "information industry." There will probably be political disagreement over what roles the Telecommunications Administration and private business will play in this picture.

The Stette report, which will be delivered on Tuesday, completes the two previous partial reports from the Telecommunications Committee.

The Ministry of Transport and Communications will now bring together the many recommendations and ideas in a Storting report on "telematics" which according to the plan will be presented to the Storting around the end of the year for debate in the spring of next year. This time may seem short. Political disagreement over the telecommunications monopoly and the competition situation indicates, however, that the current government will try to get the entire issue dealt with in the Storting before the election next fall.

The Telecommunications Administration has previously had the dominant position in providing telecommunications services and equipment. Private firms have dominated the computer sector. The boundary between these two growth sectors in the Norwegian economy is in the process of being wiped out since technical development has caused the telecommunications and computer services to be largely melded together.

These are some of the important questions which must now be clarified:

- To what extent will the limits of the monopoly be changed?

- To what extent will the Telecommunications Administration compete in areas such as office automation, data processing and sale of equipment such as mobile telephones, which are already covered by private firms?

- How will the expansion of cable be organized? The Stette Committee points out here, for example, that it would be natural later to separate out cable activity from the competing company and establish a new coordinated stock company exclusively for this activity.

- How will this competitive activity eventually fit in relation to the monopoly services which the Telecommunications Administration will doubtless retain? Will the Telecommunications Administration own the competing activities, and will that create possibilities for cross-subsidizing?

- How will the Telecommunications Administration--the monopoly or "basic" organization--be organized--as a stock company resembling Statoil, or continue as an administrative activity? And what consequences will a new organization of telecommunications services have on productivity--and thereby on prices for telephone conversations and other services?

The Telecommunications Committee previously recommended that the monopoly of the Telecommunications Administration should no longer include the exclusive right to sell digital home telephone exchanges. This could have significant consequences for the remaining part of the Telecommunications Administration.

Now the Stette Committee has recommended that the Telecommunications Administration be divided into three parts: an administrative division for approval of equipments, control of cable networks, etc., a division for monopoly services and one for competitive activities. This would meet much of the criticism which has been directed because of the mixture of the roles of the Telecommunications Administration as a monopoly institution, a competitive supplier and a neutral organ which approves the competitors' equipments. There are, however, conflicts in the definition of boundaries between these parts of the giant establishment, something which is shown by the dissenting portions of the committee's report.

A bare majority of the committee recommends that the Telecommunications Administration become a stock company similar to Statoil, owned by the Ministry of Transport and Communications. The majority believes that such a company would give an overview of annual plans to the Storting, such as paragraph 10 of the Statoil resolution provides for the oil company. The minority wants a continued administrative activity. This disagreement could give support to a new debate about how large state activities should be organized so that politicians will have the best possible long range control at the same time as the state has economic freedom of action. Temporarily it does not appear that there is agreement about this. On the other hand the framework and ownership conditions surrounding this competitive public company is causing quite a bit of debate and political conflict.

Director General Holler has already clearly stated his disagreement with the majority in the Stette Committee which recommends that the Telecommunications Administration be cut off entirely from competitive activity, which the majority believes should be owned by the ministry. The minority wants the Telecommunications Administration to be the owner of such a stock company.

The Telecommunications Administration Communications Company (TBK) is already established as an attempt by the Telecommunications Administration to sell competitive services and equipment. Many company leaders in communications and computer firms prefer to see TBK, or a future competitive organization, separated as clearly as possible from the Telecommunications Administration. That could, however, reduce the coordination between the competitive company and the monopoly. The majority in the Stette Committee warned against a situation in which the monopoly part functioned as both the owner and the contract partner for the competitive part.

The majority in the Stette Committee also approved a later privatization of competitive activity: "One factor which probably should also be given some weight is the possibility for the state to dispose of the competitive organization entirely or in part in the future. As is known, in recent years a number of countries have privatized their telephone activity," said a majority of the Stette Committee.

Such thoughts have previously gained mostly approval from nonsocialist politicians, and opposition from the Labor Party. It will be interesting to see what recommendations now come from Center Party chairman Johan J. Jakobsen's department and later from the government on this issue.

9287

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## NORWAY

### TEST TRANSMISSIONS OF TV PROGRAMS TO SVALBARD, OIL FIELDS

Oslo AFTENPOSTEN in Norwegian 6 Sep 84 p 48

[Article by Oystein Grue: "Norwegian TV to Svalbard and Europe This Fall: TV Technology of the Future"]

[Text] TV technology of the future will be used when the Telecommunications Administration Research Institute at Kjeller (TF) begins this fall with the first test transmissions via the recently launched satellite ECS-II to Svalbard and the oil installations in the North Sea. "We are the first in the world to use the new TV standard which was approved by the European Broadcasting Union last year, and which the Nordic Council of Ministers approved in a followup last week," said scientist Finn Torstensen at TF to AFTENPOSTEN.

A Norwegian-developed antenna for transmitting and receiving in accordance with the future TV standard is mounted on the top of TF's research building at Kjeller. The antenna, which was developed in close cooperation with Raufoss Ammunition Factory, has attracted international attention because it makes possible much closer satellite placement without neighboring satellites interfering with the transmission.

The antenna will be used for the first time when the test transmissions from Marienlyst via Kjeller begin in the fall. TF will then use the ECS-II satellite which was launched on 8 August to relay Norwegian TV to Svalbard, the oil installations in the North Sea, Faeroe Islands, Iceland, and even to the east coast of Greenland. It will be possible to receive NRK [Norwegian Broadcasting Corporation] program offerings from these test transmissions over most of Europe.

TF at Kjeller has, in close cooperation with the European Broadcasting Union, participated in the development of the next generation's TV standard, the so-called C-MAC TV standard which has been approved for introduction in Europe, and which in addition to improved picture quality will also make it possible to receive TV sound in stereo.

"It is said that the sound quality in TV transmissions will be at least as good as in today's compact home record players," AFTENPOSTEN has learned.

"The investment on the receiver side will determine the quality of the TV picture and sound," said Odd Gutteberg at TF.

Last week the Nordic Council of Ministers followed up last year's resolution in the European Broadcasting Union so that the introduction of a new TV standard will also include the Nordic countries. That means that the TV technology of the 30's will now be replaced.

#### Svalbard First

TF has worked with satellite transmissions to Svalbard since 1974, first by telephone and later by TV, said Odd Gutteberg.

In 1982 test transmissions via the OTS satellite were attempted. The conclusion was--in spite of the unfavorable position of Svalbard in relation to the satellite being used--that it was possible to receive TV signals with acceptable quality.

That relates to the fact that the C-MAC broadcasting equipment which TF at Kjeller developed in cooperation with NRK will also relay stereo radio on two channels, P1 and P2, in addition to NRK's TV program over the ECS-II satellite.

9287

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SATELLITE TRANSMISSIONS OF BUSINESS DATA TO BEGIN

Oslo AFTENPOSTEN in Norwegian 6 Sep 84 p 5

[Article by Torill Nordeng: "Oslo Earth Station Ready in May: Business Data Via Satellite"]

[Text] In May of next year the Oslo area will get its own earth station for satellite transmissions. The station will relay business communications, transmitting data through the European telecommunications satellite ECS-11. A four and one-half acre lot has been acquired by the Telecommunications Administration for the large installation in Nittedal outside Oslo. Construction and electronic equipment for business communications will cost 12-13 million kroner.

The new earth station will in the first place be a good service to all the firms which want to transmit information to computers. Project leader Einar M. Hemb of the Telecommunications Administration mentioned the oil companies in the North Sea as an example.

"But the station will also be equipped so that in the future it can carry out tasks for Tele-X, meaning TV transmissions. Intelsat and other satellite systems can also become involved," said Hemb. "The Storting must make the decisions about future expansion of the earth station."

Hemb explained that the Oslo earth station will make available exceptionally advanced forms of communication via satellite. Transmissions to Nittedal will come via digital or analog radio from Røverkollen and Tryvann. The advantage of the system is that it will be simpler to transmit data to the rest of the Nordic countries, a number of other countries and even Svalbard.

The Telecommunications Administration is building and will operate the station, which eventually will be remotely controlled from Tryvann's Tower in Oslo. Hemb has no doubt that there will be a requirement for several new work positions.

Nittedal municipality outside of Oslo was chosen as the location for the earth station because the place is reasonably close to Oslo, and provides good shielding for radio terminals. In the future it is highly probable



that there will be a forest of antennas on the four and one-half acre area. For business data transmissions, which will begin next summer, an antenna 5.5 meters in diameter is necessary. If full expansion is undertaken, investments will come to at least 40 million kroner.

Hemb is very pleased with the development work so far. Construction began as recently as June of this year. The project will be completed in February. Then all the technical equipment will be installed, and May it is hoped that the first transmissions of business data can begin.

9287

CSO: 5500/2767

# DOMESTIC MANUFACTURERS BUILDING FINANCIAL DATA NETWORK

Oslo AFTENPOSTEN in Norwegian 18 Aug 84 p 22

[Article by Ulf Peter Hellstrom]

[Text] This fall, electronic information services with an emphasis on supplying stock market and financial news to businesses will begin to make some headway in Norway: the Oslo Stock Exchange plans to begin large-scale transmission of transactions and updated stock quotations over the telephone network to computer terminals at the offices of stockbrokers, mass media workers, and individual companies. Both DnC's Telebank and Kreditkassen's K-Link are about to begin regular service. Other banks will follow. A growing number of companies are plugging into the banks' new electronic services. These services will gradually be expanded so that companies will be able to make a number of transactions directly from their own computer terminals.

The large, cooperative Telebank project in the Lillestrom area, not to be confused with DnC's Telebank service, shows how far Norway has come in the use of data and telecommunications technology for financial transactions. Norway is actually the second country in the world (France was the first) to make large-scale experimental use of an "intelligent" banking card with a built-in microprocessor, or electronic "checkbook/wallet," to test the effects of such a card on the public, businesses, and banks.

For Norwegian businesses, however, it has not been easy to obtain continuously updated information on stock and currency market trends at home and abroad, financial news, etc. To be sure, the large international communications networks such as the Dow-Jones and Reuters systems have met the needs of financial institutions and foreign exchange brokers, but individual companies have had less effective means of communicating with their brokers and banks. Now the trend is toward the placement of computer terminals in the individual companies, to serve as "windows" to the financial world with new information from hour to hour.

## Oslo Stock Exchange

At the center of the new growth in electronic information services for data and video text transmission is the new service established by the Oslo Stock Exchange. "Customers will receive the latest information by being connected to

our own computer system," said Knut Jakhell, who is in charge of EDP at the Oslo Stock Exchange. Several brokerage firms and stock divisions of banks are already connected to the system. Development of this new stock service has gone slower than anticipated, but the idea is that other interested parties, such as the mass media, eventually will be able to subscribe to the service.

During the initial phase, the system will provide current stock quotations, volume, indexes, and foreign exchange rates for the day. Other categories of information will probably be added subsequently.

The information will be transmitted to subscribers' computer terminals via Datapak, the data transmission service of the Telecommunications Service. In this way, companies can receive the final quotation of a given stock as soon as it is posted at the Oslo Stock Exchange. Software can be used to copy and store data from the exchange for subsequent independent analysis with the company's own computer system.

The computer system at the stock exchange does not have the capacity to deal with a large number of subscribers, but information from the exchange will be part of the financial data forming the backbone of the information services now being developed by the major banks and other companies.

#### "Telebank"

"About 20 companies are already connected to Telebank and by the end of the year the figure will be up to about 50," said Thor Fosoid, assistant manager of DnC. It appears that DnC will begin regular operation of its Telebank service on 1 October.

Telebank now functions primarily as an information service for business accounts and currency information, but stock information is now being added. According to DnC estimates, within the year businesses will be able to make transactions involving their accounts from their own terminals, so that this feature will become a regular part of the service. So far, however, the transfer of funds involving a third party, other than the business and the bank, cannot be made. This will hardly be possible before the end of the year. Here the question of security will enter the picture. Fosoid believes, however, that most of the problems involved in news transmission will be eliminated by the end of September.

Among DnC's Telebank customers are Gollum Fabrikker, Christiania Glasmagasin, Sig. Bergesen, Simrad Subsea, and Kyno Industrier, to name but a few.

#### K-Link

Kreditkassen's K-Link is tailor-made for the public telecommunications service, which has been delayed due to technical problems but will be in operation sometime next year.

K-Link now has about 15 companies connected to its video text service, including

Dyno, Actinor, Trallfa, Elf, and STK. There are also several internal users.

"We have given maximum priority to the development of this electronic service. Our goal is to get the information to the customer as quickly, simply, and comprehensibly as possible. For this reason, we have avoided traditional EDP systems that require the user to enter command words," Kreditkassen vice president Einar J. Lyford said.

K-Link contains "chapters" of office information, currency market, stock market, and financial summaries, and a service with which Kreditkassen is now attempting to draw the greatest possible benefit from its merger with Fiskernes Bank and its position as a major real-estate broker: a ship market has already been established where customers can see which fishing vessels have been registered for purchase or sale. A similar system will be tested later for the real-estate market. K-Link is being developed in cooperation with the Norwegian Center for Informatics (NSI) and other organizations.

Both Lyford and Foseid pointed out that information suppliers other than the two banks can utilize their new banking services to come into contact with business customers who subscribe to Telebank and K-link.

"We have stressed the development of competence in practical communications between the bank and its corporate customers. We believe we have made great progress in the area of the electronic transfer of funds," said Bergen Bank vice president Finn Otto Hansen. This bank has also been testing "electronic banking services" for some time, including tests with the Vest group.

Among savings banks, Fellesbanken has the most experience with terminals at individual businesses. The Norwegian State Railways has had its own terminal for several months. In this way, it is able to keep up with various accounts in a number of savings banks throughout the country. Nordmore Sparebank has a similar system for a local association of dairies.

#### Competition

Eventually, the new information services will probably add more and more new corporations to their lists of customers. At that time, competition will appear on the scene. Bank officials agree that the following factors will decide which of the services survive:

Updating (how fresh is the information? How often are the currency exchange rates and other information updated?)

Quality (How useful is the information in the decisions made by corporate management?)

The cost of the service.

The banks believe that these new electronic banking services will pay for themselves and eventually show a profit. The three major commercial banks seem to agree, however, that during the next few years the primary customers of these banking and information systems will be corporations.

# TELEPHONE NETWORK OVERBURDENED BY DATA TRANSMISSIONS

Oslo AFTENPOSTEN in Norwegian 20 Aug 84 p 4

[Article by Dag Fonbaek]

[Text] The Telecommunications Directorate will consider making spot checks among selected customers to help determine the extent of data transmission over the telecommunications network. Data transmission during the evening and night is probably one reason why the network is overburdened. It is hardly likely that the Telecommunications Service will prohibit its larger customers from transmitting data over the telephone network, however, according to the technical director of the Telecommunications Directorate, Ole Petter Hakonsen.

"Since the directorate does not now register any difference between data transmissions and normal telephone calls, we do not know the exact extent of the burden caused by data transmission during the evening and night," Hakonsen said.

"Equipment to register this difference would have to be developed specifically for this purpose. This would represent a disproportionately large investment at a time when there is more and more demand to expand the telecommunications network over the entire country."

Instead, the Telecommunications Directorate wants to level off peak usage of the telecommunications network and is considering spot checks of companies that may be transmitting data during times of the day when rates are lower. Although customers are asked to transmit large quantities of data over the well-developed joint Nordic Datex network, some companies still prefer to use the telephone network. "Datex is best suited to transmitting brief messages in a hurry," Hakonsen explained. "Large quantities of data are still transmitted over the telephone network."

From a technical stand, it is possible to "scramble" data transmission signals, that is to interrupt the signal and give a kind of priority to telephone calls during busy periods.

The Telecommunications Service wants to offer its customers as much service as possible, however, so it will be extremely reluctant to limit services to

large individual customers. The use of a meter system in the evening is a possible way to distribute the cost of further expanding the telecommunications network. This measure would be in line with the goal of dimensioning network capacity according to the busiest time of the day.

An overburdened telecommunications network is not a problem found in cities and densely populated areas alone. Problems with busy signals and long waiting times as a result of overburdened lines are found virtually everywhere in the country.

9336

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'TELEBOX' SERVICE TO BEGIN TEST OPERATION

Oslo AFTENPOSTEN in Norwegian 21 Aug 84 p 36

[Article: "Telebox in Test Operation"]

[Text] The Telecommunications Service is now testing an electronic message system called Telebox. With the help of a simple computer terminal equipped to communicate over telephone lines, a customer can call the electronic "mailbox" and leave messages for other Telebox users. The receiver obtains his messages as soon as he "checks his mailbox."

The Telecommunications Service stated that there was great interest among certain selected businesses in participating in testing of the system, which represents an expansion of the existing data and communications system. The management of the Telecommunications Service itself wants to participate in the tests.

In other countries where similar systems have been tested, it has been proven to be a useful tool for people with busy schedules who are always on the go. The system operates 24 hours per day and permits the user to choose the most convenient time to check for messages in the Telebox.

9336

CSO: 5500/2758



START FOR TELEDATA SERVICE DELAYED UNTIL END OF 1985

Oslo AFTENPOSTEN in Norwegian 24 Aug 84 p 28

[Article by Ulf Peter Hellstrom]

[Text] Teledata Service will begin regular operation late next year. This was announced after the Telecommunications Service board met last Wednesday to discuss delays in the introduction of its new service. Two companies working together on the project, Tandem and Data Logic, will be awarded the contract for delivery of telecommunications equipment to the Telecommunications Service. The board has also asked the task force that is examining evening telephone usage to submit its report to the board as soon as possible.

According to the original plan of the Telecommunications Service, the official Teledata Service was to begin operating in late 1984 or early 1985. Since the manufacturer had difficulty meeting the technical specifications from the Telecommunications Service, new bids had to be solicited. As a result, Tandem and Data Logic were chosen. This led to a delay in the entire Teledata Service program. But Thor Viksveen, head of the information office at the Telecommunications Service, told AFTENPOSTEN that a temporary, simplified version of the Teledata Service, or video text, could be available to Telecommunications Service customers as early as April or May of next year, assuming that the equipment is delivered on schedule. The equipment is to be delivered within 15 months.

The contract Tandem and its partner Data Logic have received will be worth 10 million kroner. The contract is also extremely valuable in terms of prestige.

The board still opposes any general increase in telephone rates next year. This is also the preliminary goal for 1986.

Figures presented to the board indicate that, by the end of the year, there will be virtually no waiting list for telephone installation. Another survey showed that only 2,300 telephone customers in Norway are still dependent on manually operated telephone exchanges.

## BRIEFS

IMPROVED SHORTWAVE FACILITIES PLANNED--The Bundesrat (Executive National Council) of Switzerland is recommending to the local councils new legal support for the federal aid given to Schweizer Radio International (SRI), as well as participation by the Swiss government in bearing the programming costs and the expenses involved in transmitting the broadcasts overseas. Since 1935 shortwave broadcasts have been transmitted from Switzerland to other European countries and overseas. Today SRI is conducting its programming within the scope of the SRG [Swiss Radio and Television Corporation] license granted it by the Bundesrat. The shortwave broadcasts are intended to strengthen the ties between Swiss citizens living abroad and their homeland and to promote greater recognition of Switzerland abroad. The SRI is thus performing a task which the government may not undertake itself in order to preserve the independence of radio and television. Based on Article 45A of the federal constitution and the federal government's general responsibilities with regard to foreign relations, however, it is proper for the government to bear half of the costs of programming and of transmitting the broadcasts overseas. At present all expenses are borne by the Swiss radio and television license holders. The existing transmitting stations are technically obsolete. In many parts of the world it has become difficult or even impossible to receive SRI transmissions. In order for SRI to continue to offer complete programming in the future and to assert itself in the face of international competition, programming must be expanded somewhat while at the same time improving overseas transmitting facilities by building a new shortwave transmitting center. The investment costs for this new station, which will probably be located in the canton of Jura, will run to about 65 million Swiss francs and will be financed by the PTTs. Following modernization of the facilities, the annual operating costs are expected to be about 14 million Swiss francs for broadcasting the program overseas. In 1983 a total of 26.2 million Swiss francs was spent on shortwave radio broadcasting. Of that sum, 13.7 million Swiss francs were allocated to the PTTs for technical studio equipment and transmitting stations for European and overseas broadcasting. The SRG assumed SRI's programming expenses in the amount of 12.5 million Swiss francs. Today, both organizations cover their expenses from their share of the subscription fees for radio and television of which 30 percent go to the PTTs and 70 percent to the SRG. From 1964 to 1977 the federal government allocated annual sums to

the SRG for shortwave service. In 1977 the federal contribution was 6.6 million Swiss francs. This sum represented about 70 percent of the operating expenses of SRI at that time. When spending cutbacks were made, however, the federal contribution was eliminated. For the future, the federal government again wants to become financially involved, covering half of the costs for both programming and the technical requirements for overseas broadcasting. This will cost the federal treasury about 15 million Swiss francs annually. Construction of the new transmitting station is expected to take five to six years. In the meantime, improvements in overseas transmissions to those areas in which reception of the "voice of Switzerland" is poor can be accomplished by renting foreign relay stations. The federal government will also bear half of these costs. [Text] [Zurich NEUE ZUERCHER ZEITUNG in German 24 Aug 84 p 21] 12552

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